

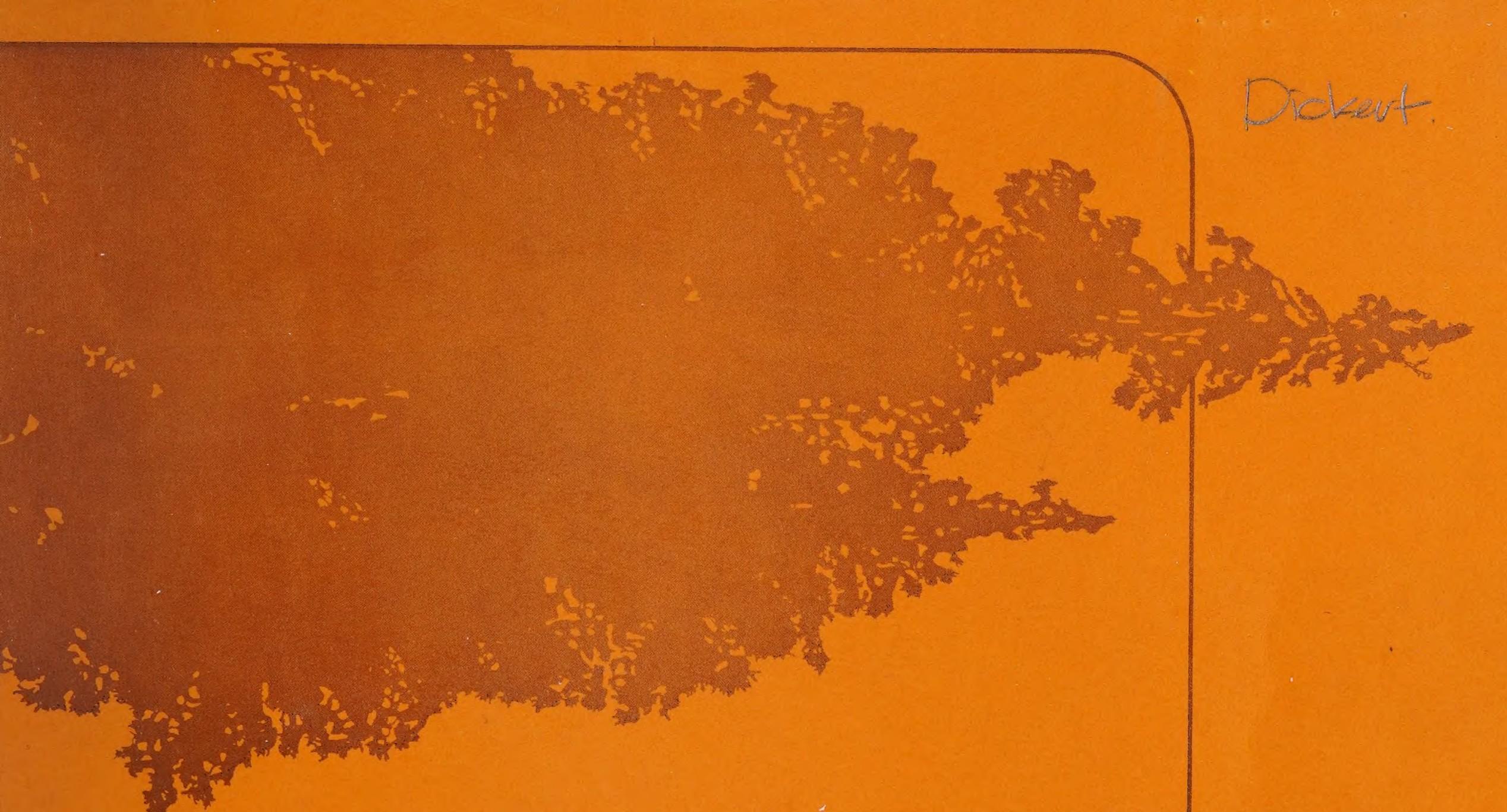






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SONOMA COUNTY

open space



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SONOMA COUNTY OPEN SPACE ELEMENT PHASE II

JUNE 1973

SONOMA COUNTY PLANNING DEPARTMENT

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SUMMARY - OPEN SPACE ELEMENT

INTRODUCTION TO OPEN SPACE

State planning law requires that every city and county "prepare and adopt an open space plan for the comprehensive and long-range preservation and conservation of open space lands". Open space land is defined by the law as comprising:

- natural resource lands
- resource production and extraction lands
- recreation land
- scenic land
- watershed and groundwater recharge land
- wildlife habitat

OPEN SPACE AND THE GENERAL PLAN

The Open Space Element is one of nine mandatory elements of the Sonoma County General Plan. The first phase of the Open Space Element was completed in June, 1972. It included a natural resources inventory, a report of Sonoma County open space issues, and a statement of goals and policies developed by the Citizens' Advisory Committee on Open Space.

Phase II of the Open Space Element compiled over twenty maps illustrating many environmental characteristics of Sonoma County. In addition to requiring an Open Space Element and a consistent open space ordinance, State law requires that certain aspects of the County's environment be identified, mapped and planned. Several of the twenty environmental source maps serve to satisfy this legal requirement.

From the mass of data contained on the (environmental) source maps, three Environmental Sensitivity Maps were generated showing Hazardous Areas, Sensitive Areas, and Unique Areas. These maps can be manipulated in several fashions to show different combinations of environmental concern. An interim open space zoning ordinance can then be framed to reflect the composite environmental sensitivity map.

The final phase of the Open Space Element will involve the updating and refinement of the data base and the integration of open space recommendations with the other General Plan elements.

THE OPEN SPACE ELEMENT - PHASE II

The Sonoma County environmental data system, from which this Open Space Element was developed, is based upon the use of 250-acre grid-cell for organizing and recording information; computers for storing, manipulating and displaying information; and a value-setting procedure called the "Delphi process" for identifying and incorporating citizen values.

Translating the mass of environmental data of the twenty source maps into three Sensitivity Maps required assigning weights or "importance ratios" to the various environmental factors. This was a vital step because priorities must be established and a hierarchy of environmental concerns recognized.

Only certain lands can be studied, controlled or acquired at one time. Hence, those areas representing the most serious sort of environmental concern must be identified first. To accomplish this task, priorities are essential. Likewise, the true environmental character of an area cannot always be understood by the simple addition of environmental factors. Most natural factors have a cumulative effect when combined and proper appreciation of this requires giving different factors different weights. The weights or relative importance of each environmental data category was arrived at through combining planners' values and Citizen Committee members' values. The Delphi-process aided in eliciting value judgments from both the planners and the citizens.

The composite Environmental Sensitivity Map will later be compared with six land use suitability maps developed from citizen values.

Hazardous Areas

The Hazardous Areas Map can be thought of as representing the potential environmental impact on man. In these areas of the County certain human activities could face environmental problems such as earthquakes, landslides, fires or floods. The protection and preservation of open space for public health and safety is one requirement of State law.

Sensitive Areas

This map records areas where man's activities may have an impact on the environment that could lead to a deterioration or destruction of the natural equilibrium. In Hazardous Areas, natural forces threaten man; in Sensitive Areas man endangers the natural eco-balance. Aquifer recharge areas, zones with steep slopes and high runoff, and unique habitats are examples of Sensitive Areas.

Unique Areas

State law requiring open space planning emphasizes the identification and protection of areas of ecological, cultural, and scientific importance. The Unique Areas Map identifies natural and cultural resources and characteristics of Sonoma County which are rare or endangered. Historical and archeological sites, prime agricultural soils, and exemplar wildlife habitat are considered unique areas.

IMPLEMENTATION AND REGULATION

State law AB 966 requires the County to prepare an interim open space zoning ordinance consistent with the Open Space Element. The need for an implementation program arises partially from the voids inherent in conventional land use controls and from the urgent need to provide "open space" for the present and the future.

A permit method similar to that of the Coastal Commission and Bay Conservation and Development Commission was chosen as the most effective interim open space implementation tool. This permit system would be an interim measure, being replaced with a final implementation plan when the entire General Plan is completed in two years.

There are several ways to combine the Hazardous, Sensitive, and Unique Areas Maps to define the boundaries of the permit system. In this report, the Staff proposes alternative areas for the Board of Supervisors' consideration for developing an interim open space ordinance.

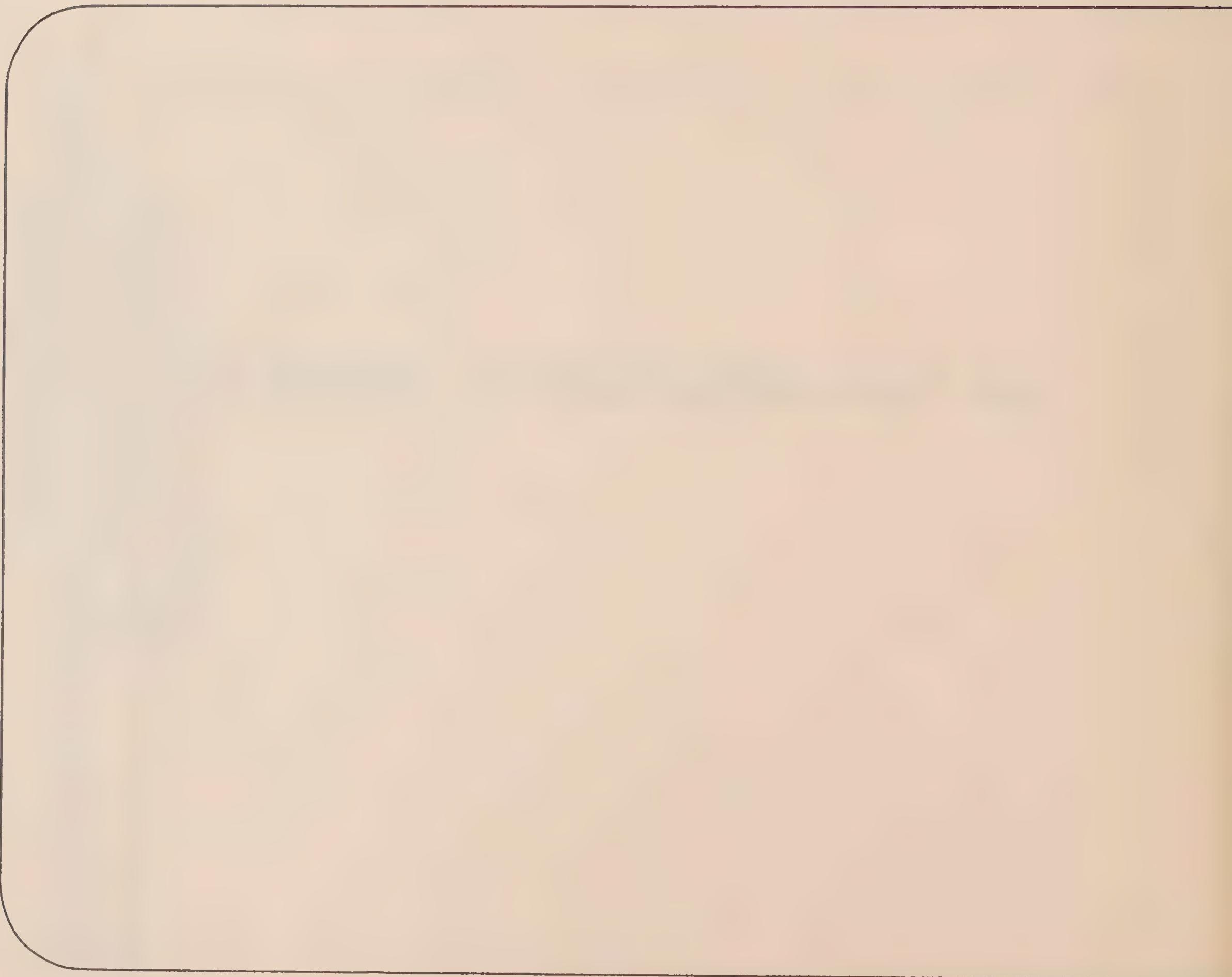
The Open Space Element is an interim plan, describing the environmental sensitivity of the County. At a later date, a final open space land use plan will be prepared.

CHAPTER

1

An Introduction to Open Space





OPEN SPACE DEFINED

"Open Space" covers many classifications of land use which seem to have one thing in common - the particular space can be characterized as a landscape whether natural or man-made. Natural landscapes include rivers, bays, oceans, hills, valleys, etc. and combinations of these. Man-made landscapes includes reservoirs, quarries, farms, vineyards, golf courses, etc.*

This concept of open space is derived from a statewide study of Open Space prepared for the 1965 State Development Plan. The definitions and concepts of open space arrived at in that study have been generally accepted by California cities, counties and regional organizations. The State law mandating local open space planning follows the same general concept of open space, using a slightly more generalized breakdown of open space lands to allow for local differences. Six major classifications of open space are defined, each one including several sub-groups. This system provides a comprehensive approach, examining open space for:

1. Managed Resource Production
 - Prime agricultural lands and lands for specialty crops
 - Lands for grazing
 - Lands for mineral extraction
 - Lands for water supply
 - Water areas for fish and marine life production

* Open Space: The Choices Before California. The Urban Metropolitan Open Space Study, EDAW, San Francisco, 1969.

2. Preservation of Natural and Human Resources
 - Lands, tidelands, marsh and water areas for fish and wildlife refuge
 - Notable geological features
 - Historical and cultural sites and places
 - Areas to provide visual amenity
3. Health, Welfare, and Well-Being
 - Lands to protect the quality of water resources, including groundwater
 - Land for solid waste disposal
 - Open areas to insure airshed quality
4. Public Safety
 - Flood control reservoirs, flood plains, drainage channels and areas below dams
 - Unstable soil and fault areas
5. Outdoor Recreation
 - Lands for developed recreation uses
 - Lands for water-oriented recreation
 - Lands for natural environment experience
 - Lands for scenic and recreational travel
6. Shaping of Urban Growth
 - Lands to preserve community identity
 - Lands to prevent inefficient urbanization

An all too common misconception of "Open Space" is one solely limited to passive park areas and/or to vacant unused land awaiting development. Applying the classification system above to Sonoma County reveals the extent and variety of productive lands within county boundaries. These open space lands not only determine the visual character of the County as we see it but the structure of its economy as well.

PLANNING REQUIREMENTS - STATE MANDATED

Intent

The intent of the legislature as spelled out in the Government Code is that the preservation of open space land is necessary: not only for the maintenance of the economy of the state but also for the assurance of the continual availability of land for the production of food, enjoyment of scenic beauty, recreation, and for the use of natural resources. Additionally, the act discourages premature and unnecessary conversion of open space land to urban uses and generally provides for declaration of intent by the state to conserve open space lands.

Local Requirements

Each local agency by June 30, 1973 is required to prepare, adopt, and submit to the Secretary of the Resources Agency a local open space plan for the comprehensive and long range preservation and conservation of open space land within its jurisdiction. The plan shall also contain an "action" program consisting of specific programs which the legislative body intends to pursue in implementing its open space plan.

Open Space Actions

Any action by a county or city by which open space land is acquired or disposed of, or its use restricted, or regulated, must be consistent with the open space plan. No building permit may be issued, no subdivision map approved and no open space zoning ordinance adopted unless the proposed construction, subdivision or ordinance is consistent with the local open space plan.

Open space lands are broadly defined and include both natural resources lands, agriculture lands, recreation lands, scenic lands, watershed or ground water recharge lands, and wild life habitat areas. *

* California Gov. Code Section 65561

OPEN SPACE GOALS

Recognizing the need for policy direction in the early stages of the open space planning program, the Sonoma County Board of Supervisors established a Citizens' Advisory Committee on Open Space. Designed to achieve a balanced representation of diverse interest groups in the County, the Citizens' Committee produced a series of generalized goals and a more extensive formulation of related policy proposals. These goals and recommendations have provided important conceptual guidelines for the formulation of Phase I and Phase II of the Open Space Element. During the remainder of the open space planning effort, the Citizens' Committee will review their goals and policies to insure consistency between the open space goals and the General Plan. The full text of the Citizens' Committee's "Statement of Goals and Policies of the Environmental Element of the Sonoma County General Plan" is an appendix to this report. Below is a summary list of general goals.

General Goal

- I. It shall be the goal of Sonoma County to restore and maintain the environment for the economic, recreational, aesthetic and ecological needs of the public.

Goal Relating to Managed Resource Production

- II. It shall be the goal of Sonoma County to assure economic diversity by maintaining and protecting those areas which are valuable for the production of forest, agricultural, and mineral products, fresh water, and harvestable fish and game.

Goal Relating to Preservation of Plant and Animal Life

- III. It shall be the goal of Sonoma County to safeguard and maintain areas of outstanding scenic, historic, or cultural value.

Goal Relating to Scenic and Cultural Resources Preservation

- IV. It shall be the goal of Sonoma County to safeguard and maintain areas of outstanding scenic, historic, or cultural value.

Goals Relating to Natural Environmental Quality

- V. It shall be the goal of Sonoma County to dispose of and reuse both liquid and solid waste in ways which cause no hazard to health or safety and in ways which are economically efficient, ecologically sound and aesthetically pleasing.
- VI. It shall be the goal of Sonoma County to develop agricultural, industrial, and transportation systems which will minimize air pollution and not result in economic hardship.

Goal Relating to Recreation

- VII. It shall be the goal of Sonoma County to provide adequate, useable recreational facilities for all of the County's residents and for those people from other areas who may come to Sonoma County for its recreational assets, provided such recreational use is consistent with maintenance of environmental quality.

Goal Relating to the Urban Setting and Aesthetics

- VIII. It shall be the goal of Sonoma County to provide an urban setting of such outstanding quality that urban dwellers will not feel a need to escape to other areas.

Goal Relating to Public Safety

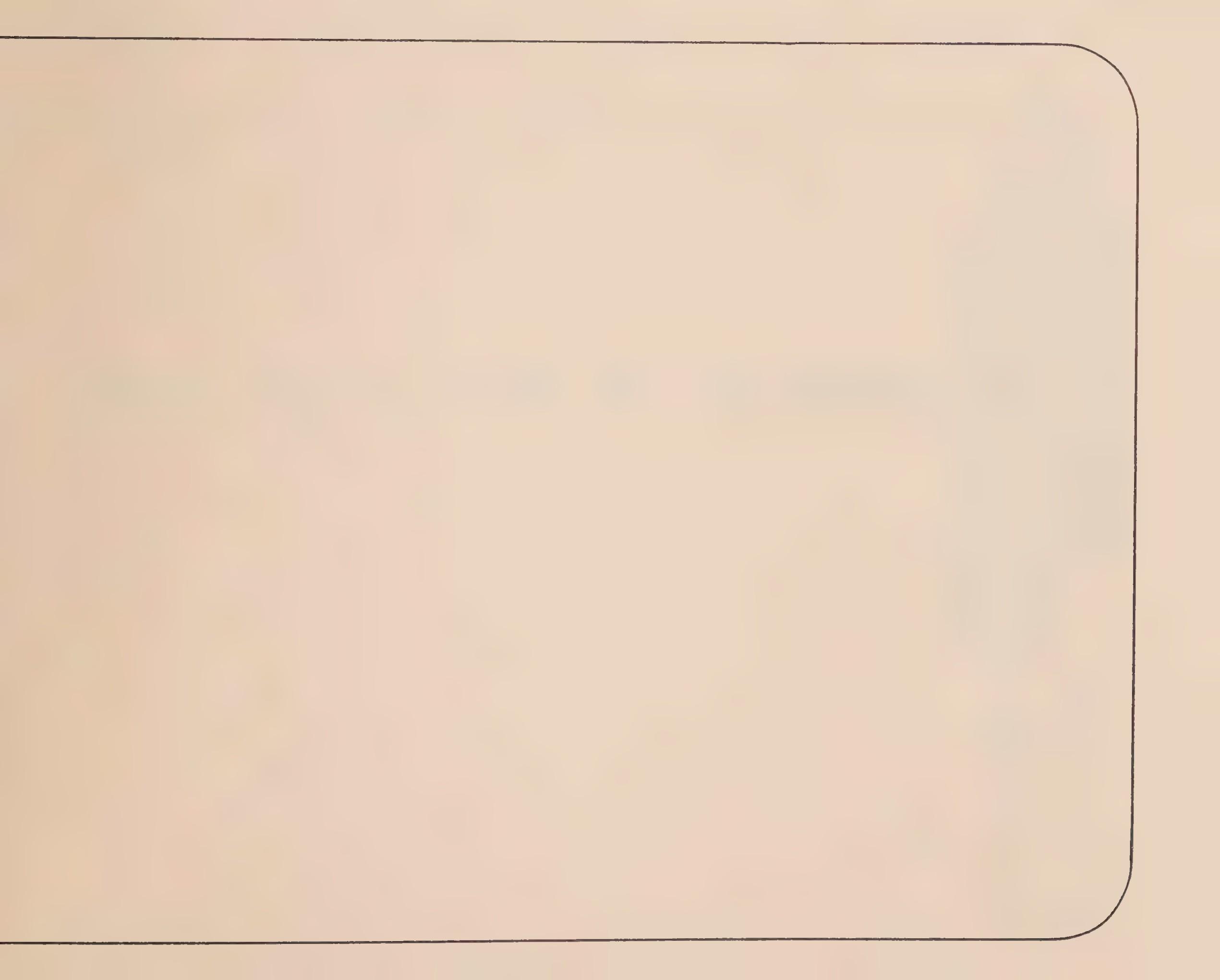
- IX. It shall be the goal of Sonoma County to avoid land uses which threaten public safety.

Goal Relating to Transportation Routes and Utility Services

- X. It shall be the goal of Sonoma County to provide facilities which meet the transportation and utility needs of the public and are of high ecological and aesthetic quality.

Goal Relating to Lands Reserved for Future Designation

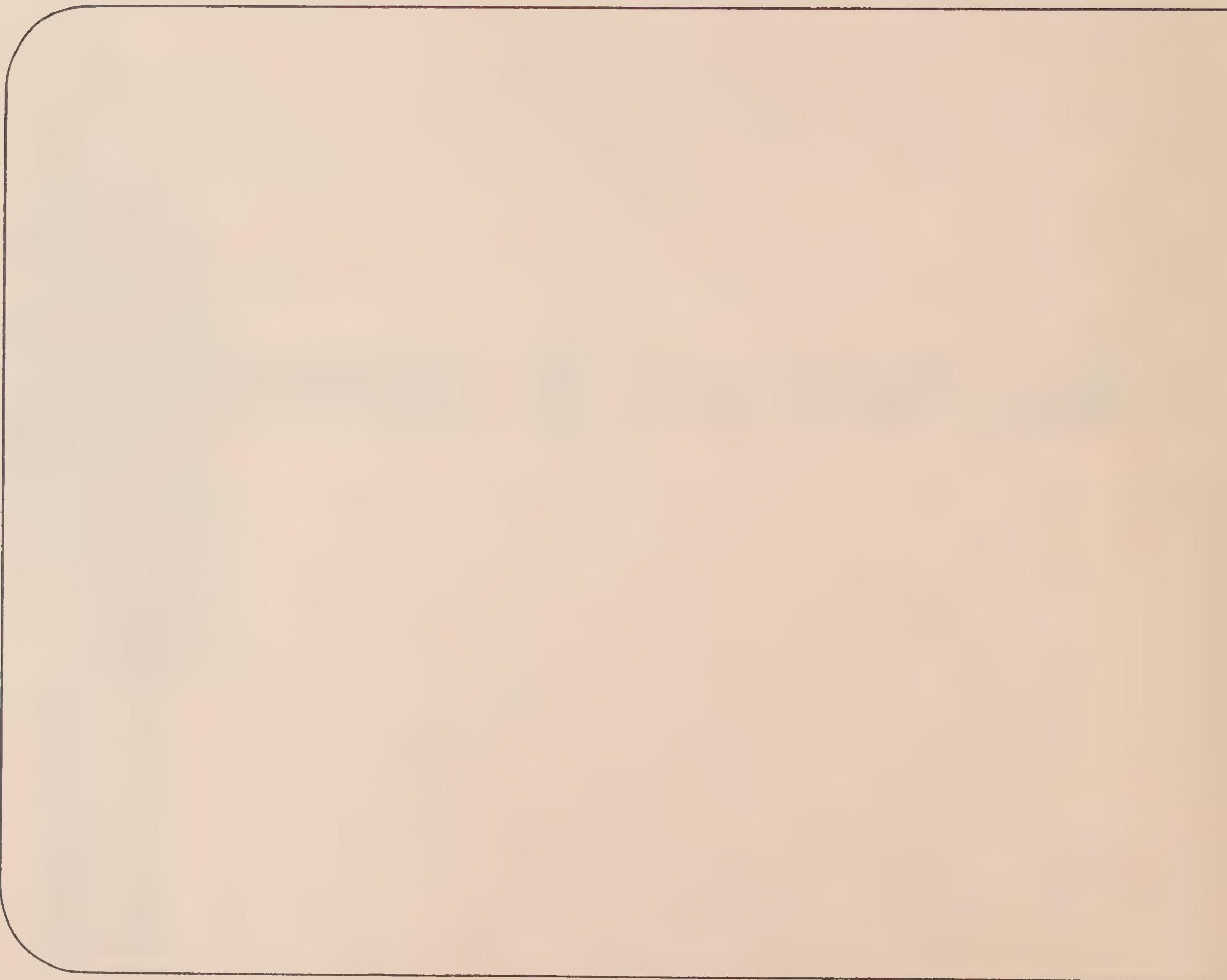
- XI. It shall be the goal of Sonoma County to provide for future unforeseen land uses.



CHAPTER 2

Open Space and the General Plan





THE GENERAL PLAN

The County General Plan is intended to be a comprehensive, long-term guide to the growth of Sonoma County. When completed, the General Plan will consist of:

1. Generalized descriptions of the social, economic and environmental characteristics of Sonoma County.
2. An evaluation of the social, economic and environmental inter-relationships and consequences of various growth alternatives chosen for study.
3. A generalized description of the physical form of growth which city and county policy-makers have elected to encourage and which has been selected from the alternatives evaluated.
4. A general description of the location and extent of the basic public services needed to accommodate the preferred growth option.
5. Recommended policies and programs for implementation of the General Plan.

Nine Mandatory General Plan Elements

State law relating to local planning requires cities and counties to prepare a general plan composed of nine mandatory elements; the preparation of these elements is the function of the Sonoma County General Plan Program:

1. Land Use - The general distribution, location and extent of the land to be utilized for housing, business, industry and other uses, both public and private. This element also addresses questions of population density and building intensity.
2. Circulation - The general location and extent of major roads and transportation routes. The circulation plan is correlated with the Land Use Element.
3. Housing - Standards and plans for the provision and improvement of housing for all economic segments of the population.

4. Seismic Safety - Identification and appraisal of seismic hazards resulting from earthquake activity.
5. Safety - Provision for protection from fire and geographic hazards.
6. Noise - Identification of noise levels associated with highways and freeways, rapid transit systems and ground facilities associated with airports.
7. Scenic Highways - Provisions for the development, establishment and protection of scenic highway routes.
8. Conservation - Provisions for the conservation, development, and utilization of natural resources such as water, forests, soils and wildlife.
9. Open Space -
 - a. Preservation of natural resources
 - b. Managed production of forests, rangeland, mineral resources, agricultural lands and related waters.
 - c. Provisions for adequate outdoor recreation opportunities.
 - d. Provision for protection of public health and safety.

OPEN SPACE ELEMENT PHASE I

In accordance with state mandates, Sonoma County prepared and adopted Phase I of the Open Space Element in June 1972. This element included:

1. A report on open space issues of the County.
2. A natural resource inventory, including forty maps at various scales.
3. An identification of areas of statewide significance and critical concern.
4. A list of goals developed by the Citizens Advisory Committee on Open Space, Conservation and Recreation.
5. An action program summarizing a number of major existing and potential tools for conserving open space.
6. Recommendations concerning prime agricultural areas.

7. A description of further open space planning activities.

Subsequent to the adoption of Phase I, the State Planning Law was amended in a manner which prompted Sonoma County to prepare and adopt, with the assistance of the Citizens' Committee, a list of open space objectives related to the previously adopted goals. This list, along with work program methodologies for Open Space, Conservation, and Recreation elements and for Groundwater and Geologic Hazards studies were submitted in August, 1972 to the California Resources Agency as an "Interim Open Space Plan", which was accepted by the agency as satisfying state law until June 30, 1973.

OPEN SPACE ELEMENT PHASE II

With the completion of Phase I and the interim plan required by state law, the Advanced Planning Staff began the second phase of the Open Space Element. Phase II deals with the synthesis and analysis of myriad environmental data describing Sonoma County. Using much of the basic data gathered and mapped during Phase I plus additional data inputs from the United States Geologic Survey and other sources, the planning staff assembled ten new environmental source maps.

Grid Cells & Data Organization

This mass of data was organized by use of a computer-aided grid based environmental data system. The recording and storing of environmental data was accomplished by superimposing a grid system (a lattice of horizontal and vertical imaginary lines defining square cells) upon each environmental map. The grid cells, one thousand meters square, represent 250 acres. Data from each of the environmental maps was digitized (coded numerically) in every grid cell. Ten data inputs were selected for each of the approximately 5,500 cells comprising the County. This coded and stored information comprises the environmental data bank, available for analysis, manipulation and graphic display. Additional environmental information was generated from the ten source maps by combining certain data already stored in the computer data bank, yielding ten more data maps.

The advantages of such an automated grid-based system are manifold:

1. Manual methods of mapping and analyzing the mass of environmental data is unwieldly, time-consuming, and yields uncertain results.
2. The manipulation, analysis, synthesis, and display of data is greatly facilitated and enlarged in scope.
3. Input data is standardized for correlation with data generated for other General Plan elements.

The Lake Tahoe study used a grid-based system to build a data bank and concluded that,

"simple questions, like the ownership or jurisdiction distribution of soil erosion potential, were virtually unanswerable without the data bank ... Previous attempts at visual overlays of 2-3 maps were, for such a large, complex region, too formidable in terms of manual interpretation and delineation. Moreover, manual estimates of acreages involved in various planning categories were possible only for singly specific purposes (such as land acquisition costs). Even with the seemingly simple 'inventory' application, the information systems served to significantly raise the level of analysis in the planning activities of the TRPA and the Forest Service."*

* Pepper, J. E. An Approach to Environmental Impact Evaluation of Land Use Plans and Policies: The Tahoe Basin Planning Information System, Department of Landscape Architecture, College of Environmental Design, University of California, May 1972.

Environmental Sensitivity

The resultant twenty data categories covered the major types of open space land the state requires to be identified, preserved and maintained, and this information was now available for the development of the Phase II element. The applicable environmental data were combined in the computer and printed out in map form indicating those areas of Sonoma County which are 1) hazardous to public health and safety, 2) environmentally sensitive due to fragile ecosystems, and 3) unique environmental and cultural resources. These three "environmental sensitivity" maps can then be combined in various ways to produce a series of composite maps illustrating differing intensities of environmental sensitivity. This constitutes the environmental sensitivity analysis portion of Phase II, and provides a basis for an open space zoning ordinance as required by state law.

Land Use Suitability

Environmental data was also analyzed by the Citizens' Committee. By assigning numerical values and importance ratios the committee is now in the process of determining the suitability of areas for locating six types of land uses in Sonoma County - urbanization, forest harvesting, rangelands, agriculture, mineral extraction, and parks. During the summer months of 1973 these six "land use suitability" maps will be compared with the composite environmental sensitivity maps to reveal those areas of the County where a potential land use conflict exists between "suitability" for development and "sensitivity" to development. A more comprehensive discussion of Phase II of the Open Space element and how it satisfies State Law is included in the following chapter.

OPEN SPACE ELEMENT PHASE III

Although the State mandates concerning open space are met by the Phase II element, Sonoma County's open space planning process will continue throughout the General Plan program. The third phase of the element will be concerned with refining and expanding

the grid-based environmental data system and with integrating open space recommendations with the other elements of the General Plan.

Data System Refinement and Updating

The grid-cell size of 250 acres used during Phase II is adequate for some County-wide general planning purposes. The Proposed Phase III effort, however, will make a more detailed study of areas where existing or potential land uses appear to conflict with environmental factors. For this level of analysis, a 10 acre grid-cell size will be used. The environmental data bank will also be up-dated and enlarged with newly-developed information. This computer-assisted refinement procedure will result in a Phase III open space plan permitting a reasonably precise basis for

- 1) determining public acquisition priorities
- 2) identifying where and to what extent specialized regulatory devices should be utilized, and
- 3) influencing the alternative growth patterns tested in the land use modelling process.
- 4) Benefits to the County's environmental impact report procedure will also be realized.

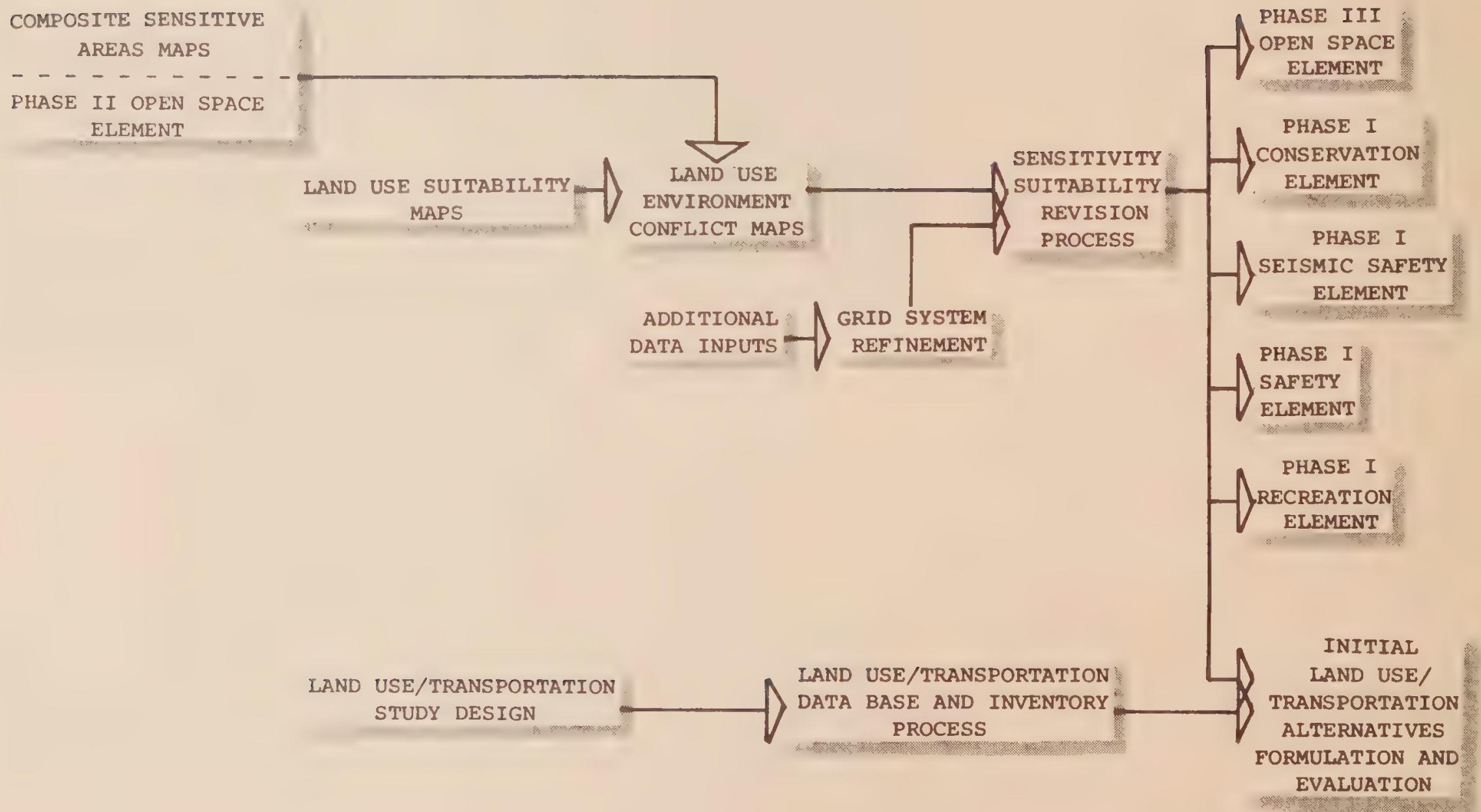
Throughout the remaining two years of the General Plan program other elements will be produced. The recommendations about open space must be re-examined as these other elements are prepared. The Land Use and Transportation elements* will develop at least two land use alternatives for Sonoma County's future growth. It is essential that the Land Use and Transportation alternatives be compared with the open space findings, so that the final General Plan is an integrated product.

Municipal Open Space Elements

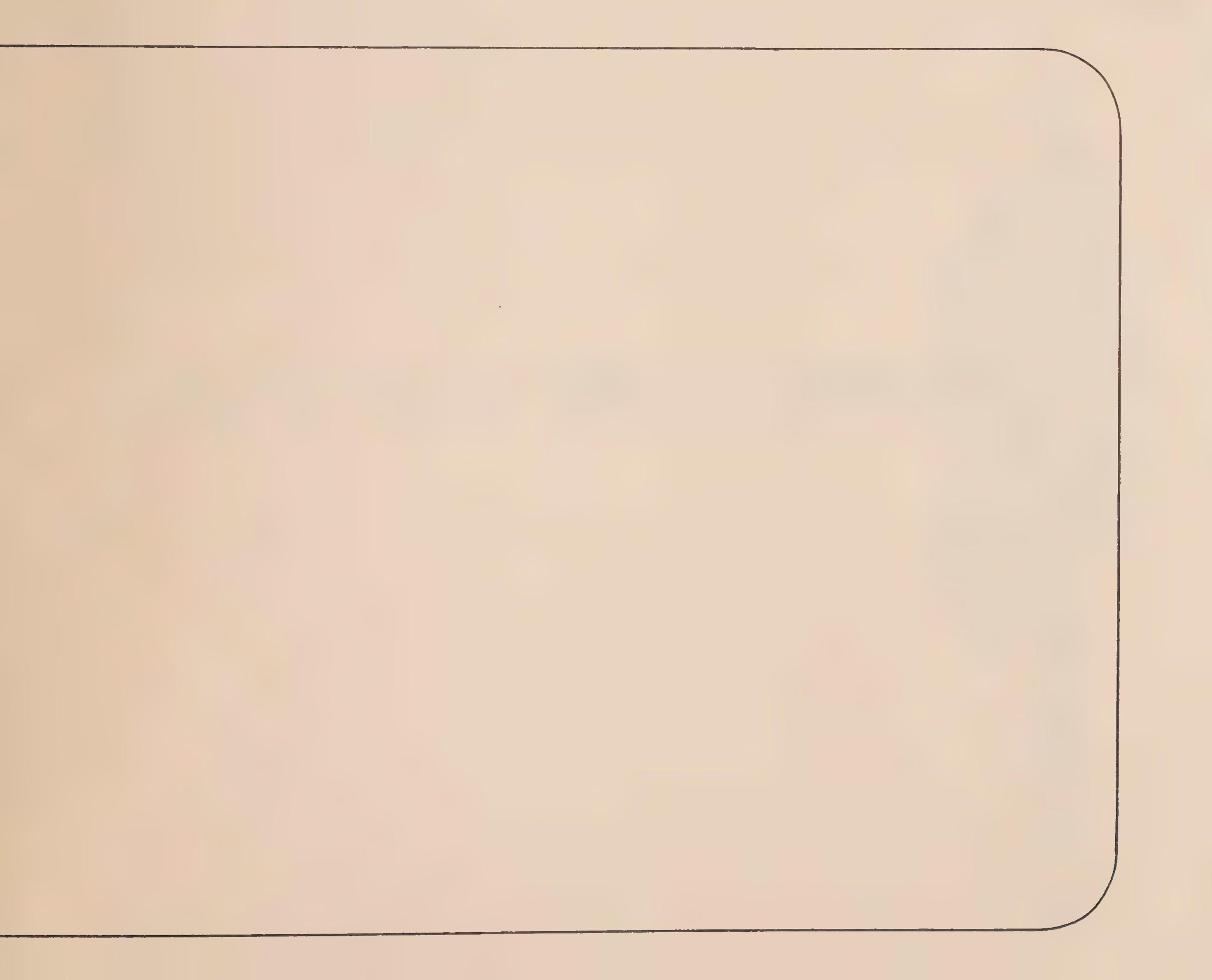
The eight incorporated cities of Sonoma County are operating

* The Transportation Element will combine two elements: circulation and transit

under the same State mandates as the County. All eight communities are currently preparing open space plans for submission to the State. Both the County and the cities have used the same guidelines developed by the State and have shared data and knowledge between staffs. After the respective legislative bodies involved have modified and adopted their open space plans the County and City staffs will continue to work toward coordinating these open space recommendations. Because one third of the County's area is encompassed within the planning areas involved in the community general plans, coordination is vitally important.



ENVIRONMENTAL PLANNING IN RELATION TO
GENERAL PLAN PROGRAM FISCAL YEAR 1973-1974



CHAPTER 3

Open Space Element Phase II



GRID BASED ENVIRONMENTAL DATA SYSTEM

In order to handle the complexity of information required by the State law as reflected in AB 966 and to provide Sonoma County with the most valid open space element, the Advanced Planning Division sought to develop a system which would combine flexibility in data processing with the ability to reflect the open space values of Sonoma County citizens. Such a system should also allow for continued up-dating and monitoring. The grid-based environmental data system used by the County satisfies these demands.

Grid System Examples

Two especially noteworthy environmental-analysis systems studied by the planning staff were the systems developed for the Lake Tahoe Regional Planning Agency and the Santa Cruz Mountain-Early Warning System designed by the University of California School of Environmental Design. The Tahoe study used a ten-acre grid-cell approach to record various characteristics of the physical and human environment at Lake Tahoe. Computer operations aided the analysis of this data and the development of conclusions concerning the inter-relationships of the various environmental elements. The Santa Cruz Mountain Study used a 22.9 acre grid-cell (not computerized) to determine those areas where conflicts existed between lands attractive for development but undesirable for environmental reasons. The University of California researchers called their method an Early Warning System - a system giving planners an advance indication prior to Development Proposals of where land use conflicts might arise. Elements of both methodologies have been incorporated into the County's system.

The Sonoma County environmental data system, from which this Open Space Plan was developed, is based upon the use of grid-cells for organizing and recording information; computers for storing, manipulating and displaying information; and a value-setting procedure called the "Delphi system" for identifying and incorporating

citizen value judgments.

Source Maps

As stated earlier, environmental data was gathered and compiled in a series of ten maps at the scale of one inch represents one mile (1:62,500). This information was garnered from many sources, including the natural resource inventory of Phase I. The ten data categories involved were:

1. Hazards
2. Slope
3. Climate
4. Soils
5. Hydrology
 - a. Well Yield
 - b. Aquifer Recharge Areas
 - c. Public Water Systems
6. Land Use
7. Unique Biotic Areas
8. Vegetation
9. Zoning
10. Historical/Archeological Sites

The data contained in these ten environmental source maps was recorded by grid-cell and stored by computer. Additional data was generated through computer manipulation of this stored data, producing eight more data maps:

1. Slope Instability
2. Soil Erosion Hazard
3. Soil Shrink/Swell
4. Soil Pressure Limitations
5. Runoff
6. Agricultural Capability
7. Range Capability
8. Woodland Capability

In addition to these eighteen computer maps, two manual maps

were prepared showing areas of major mineral deposits and existing and proposed park and recreation lands. These twenty categories, then, are the scientific data base for the development of Phase II of the open space element.

Weighting Data Factors

Two approaches can be followed in the analysis of this bulk of environmental data. First, the various maps can simply be overlaid and compared on a one-to-one basis. With this approach, every environmental factor from earthquake faults to sites of probable archaeological significance are given the same weight. It is necessary to arrive at priorities when considering open space planning. The designation of open space lands requiring protection is a long-term process. Not all lands can be studied, controlled or acquired at one time. Some practical means of choosing the most important open space needs and lands must be used. By determining the relative importance of various environmental factors and assigning weights to these factors, a hierarchy of environmental concerns can be established.

All factors are not equally important. Most people would regard earthquake faults as a more significant open space concern than archaeological sites. Since not every need can be satisfied at once, the most important needs should be attended to first. For the purpose of deciding which County areas require the most thorough analysis, the priorities are necessary. Likewise, the true environmental character of an area cannot always be understood by the simple overlaying of data maps, with no relative values attached. Combining steep slopes, high erosion hazard and high rainfall on an equal basis would yield one result. However, those factors compound one another and the total effect is greater than simple addition. (Most environmental factors have a cumulative effect when combined and proper appreciation of this requires giving different weights to different factors.)

A priority system based upon weighted open space values is also essential to the establishment of interim land controls and for public acquisition policies. Not all land can come under open space controls. Those areas, such as active faults, where the need

for control is greatest must be given the highest priority. This can only be accomplished if such issues as faults are considered relatively more important than other items. Similarly, public acquisition of land with open space value can only proceed piecemeal. Available funding sources do not permit immediate, large-scale acquisition of unique or sensitive areas. To guide policy-makers when choosing which lands to acquire, a clear set of open space priorities are essential. This is highly important in a jurisdiction like Sonoma County where there is currently a very low proportion of land in public ownership and a rich choice of environmental assets exists from which to choose.

Citizens' Committee Role

Complementing this scientific data characterizing the natural conditions and processes of the County is the contribution from the Citizens' Advisory Committee. Organized in February, 1972 the Committee's initial task was the identification of the major environmental issues facing Sonoma County and of the goals and policies which the County should pursue vis-a-vis these issues. During the months of the Phase I and Phase II work, the Committee met regularly to have continuous involvement in the preparation of the Open Space Element.

The Phase II activities of the Committee commencing in September 1972 included a period of several months devoted to a series of informational forums at which knowledgeable speakers provided background information on a list of open space related topics selected by the committee and approved by the Supervisors in August, 1972. Land economics, taxation practices, demographic trends, agricultural preservation, urban growth, transportation, planning law, the planning roles of regional and state governments, and open space planning and preservation techniques were all discussed at the forums.

At the start of 1973 the Committee organized into nine subcommittees, meeting weekly for further discussion and fact finding.

Beginning in April, the Committee commenced participation in a value setting procedure called the Delphi Process. Named after the Greek Delphic Oracle of classical times, the modern-day Delphi process has been successfully used by the RAND Corporation during

the past twenty years in diverse situations. The objective of the process is to enable a group to reach a consensus concerning an issue or set of issues. "Delphi is based on the simple premise that ... X heads are better than one" and "produce a better response than is obtainable from a single expert or a traditional discussion or conference."* Thirty representative members of the Citizens' Committee were chosen to comprise a Delphi Committee. In order to guarantee representation of the County legislative body, each Board of Supervisors member was invited to join the Delphi Committee either as an actual participant or as an observer.

SOURCE MAPS

Methodology of Open Space Element - Phase II

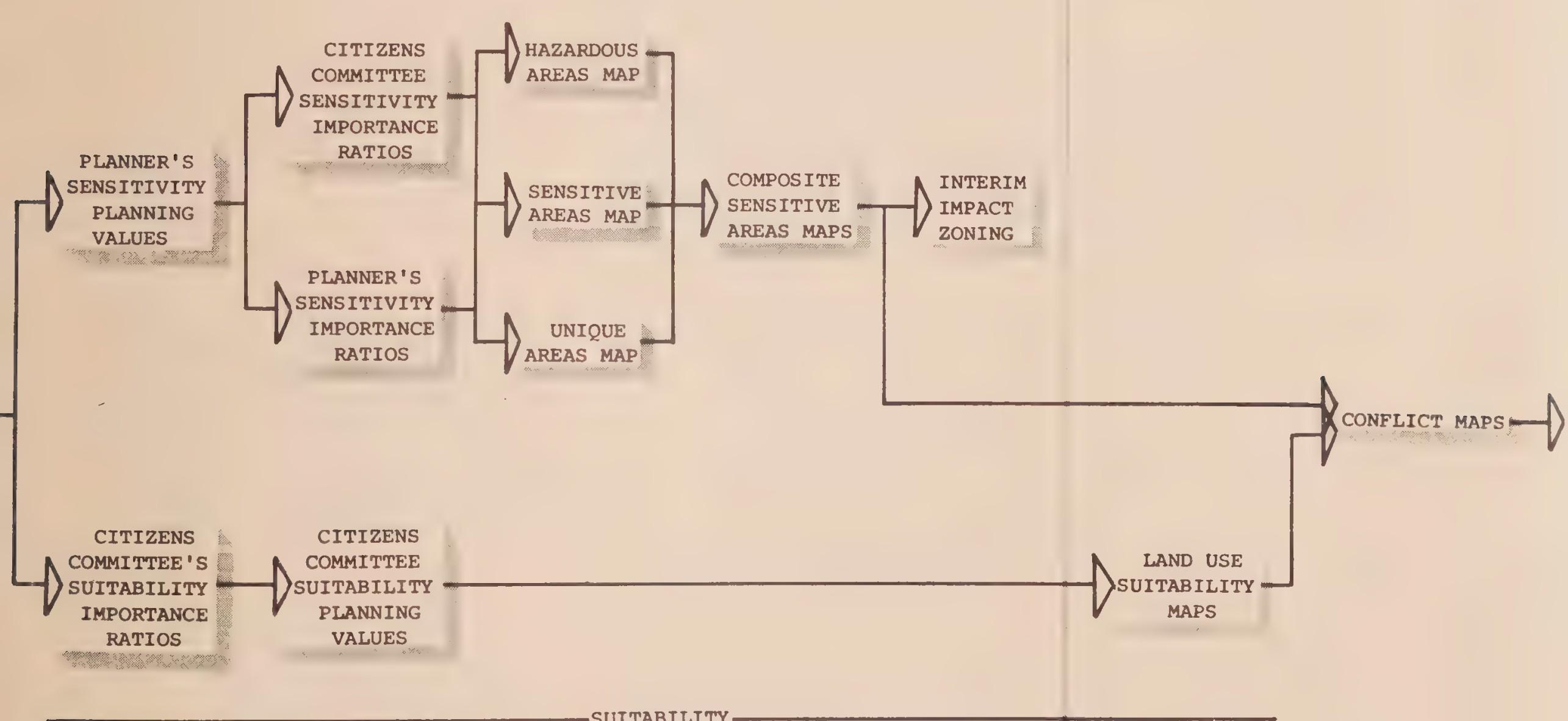
The accompanying flow chart illustrates the methodology of the Open Space Element, Phase II. The step by step procedure is listed below.

1. Twenty environmental source maps provide the data base for both the Sensitivity and Suitability maps.
2. Planners assigned numerical planning values to the environmental data sub-categories for the Sensitivity Maps.
3. Both planners and citizens assigned numerical importance ratios to the data categories for the Sensitivity Maps.
4. Concurrently, citizens gave planning values and importance ratios to the environmental data categories used to develop the Suitability Maps.
5. Three Environmental Sensitivity Maps were generated showing Hazardous, Sensitive and Unique Areas.
6. From these three Sensitivity Maps, several alternative Composite Sensitivity Maps were prepared, each according to different criteria.
7. These alternative Composite Sensitivity Maps provide the basis for determining an Interim Impact Zoning Map and Ordinance.
8. Six land use Suitability Maps are derived from the citizens assignment of planning values and importance ratios.
9. The Suitability Maps and Composite Sensitivity Maps are compared and analyzed to determine potential land use conflicts.

SLOPE
HAZARDS
SOIL EROSION HAZARD
SOIL SHRINK/SWELL
SLOPE INSTABILITY
SOIL PRESSURE LIMITATION
PUBLIC WATER SYSTEM
WELL YIELD
AQUIFER RECHARGE AREA
RAINFALL
RUNOFF
VEGETATION
UNIQUE BIOTIC AREAS
LAND USE
DWELLING UNIT DENSITY
HISTORICAL/ARCHEOLOGICAL SITES
MINERAL RESOURCES
RANGE CAPABILITY
WOODLAND CAPABILITY
AGRICULTURAL CAPABILITY

* Dickson, Paul. Think Tanks. Ballantine Books, N.Y. P. 328.

JULY 1973



OPEN SPACE METHODOLOGY PHASE II



DEVELOPMENT OF LAND USE SUITABILITY AND ENVIRONMENTAL SENSITIVITY MAPS

Delphi Process

With twenty environmental data categories mapped and stored in computer memory and the value-setting Delphi method organized, the preparation of the Land Use Suitability and Environmental Sensitivity Maps could begin. The Delphi Process assisted the planners and the Delphi Committee in selecting the environmental data applicable to each map and the relative importance of each data category. For the sensitivities maps, the process entailed several steps:

1. The selection of which environmental data categories apply to each sensitivity map - hazardous areas, sensitive areas, unique areas. In the case of hazardous areas, for example, nine of the twenty categories were selected.
2. The determination of relative importance among the data categories. Certain information was decided to be of greater relevance to the sensitivity topic (e.g. Hazardous Areas) than other information.

Steps #1 and #2 above established the "importance ratios" among the twenty data categories.

3. The assignment of relative importance to each sub-category. The category Soil Erosion Hazard, for example, has four sub-categories. The relation of each sub-category (very high erosion, high erosion, medium erosion, low erosion) to the sensitivity topic (e.g. Hazardous Areas) was established at this stage.

Step #3 above determined the "planning values" for the various environmental sub-categories.

4. The importance ratios and planning values for each sensitivity topic were then combined mathematically and three preliminary sensitivity maps printed by the

IMPORTANCE RATIOS - defined

The value, expressed as a number, attached to each environmental data category. Each data category is weighted relative to the other categories under consideration, the sum of the categories being 10.

PLANNING VALUE - defined

The value, expressed as a number from 1 to 9, assigned to each data sub-category. Some sub-categories express intensity (Erosion: High, Medium, Low); others express components (Vegetation: conifers, grassland, etc.). Each sub-category is given a number reflecting its severity or importance.

computer reflecting the values established up to this point.

5. These preliminary or initial sensitivity maps were studied and discussed by the planners and citizens.
6. A second round of the Delphi process was conducted, re-examining the selection of importance ratios and planning values in light of the initial sensitivity maps produced by computers.
7. Revised environmental sensitivity maps were computer-printed, reflecting the revised Delphi decisions. These maps, Hazardous Areas, Sensitive Areas, and Unique Areas, showed five levels of environmental sensitivity - High, Medium-High, Medium, Medium-Low, and Low.
8. A five-level Composite Sensitivity Map (the first of several alternative composite maps possible) was printed, combining the values of the three environmental maps.
9. Two alternating composite sensitivity maps were prepared giving greater emphasis to sensitive and unique areas of the County.
10. These three alternative composite maps will be recommended for review by the Planning Commission and Board of Supervisors, who will be requested to select a final composite sensitivity map.
11. The approved Composite Sensitivity Map when combined with the yet-to-be-completed Land Use Suitability Maps will be used to generate maps showing areas of potential environmental conflict.

HAZARDOUS AREAS

DATA CATEGORIES & IMPORTANCE RATIOS

1. Hazards 2.52
2. Slope Instability 1.91
3. Soil Erosion Hazards 1.52
4. Slope 1.07
5. Runoff .98
6. Soil Shrink/Swell .92
7. Soil Pressure Limitation .66
8. Rainfall .42

ENVIRONMENTAL SENSITIVITY MAPS

Hazardous Areas

The Hazardous Areas Map can be thought of as a representation of the environment's impact on man. These are areas of the County where certain of man's activities would face environmental constraints having to do with public health and safety. The protection and preservation of open space for public health and safety is one requirement of State law. "Open space for public health and safety, including areas which require special management or regulation because of hazardous conditions such as earthquake fault zones, unstable soil areas, flood plains, watersheds, areas presenting high fire risks, areas required for the protection of water quality and water reservoirs and areas required for the protection and enhancement of air quality." Identification of geologic hazards such as earthquake fault zones, landslides, and of areas of high flood and fire hazard was made for this map. Eight data categories comprising fifty-four sub-categories were chosen through the Delphi process.

Geologic Hazards

Among the geologic hazards of Sonoma County are earthquakes and landslides. Three major active faults occur in the County:

1. San Andreas Fault, paralleling the coast from the Mendocino County line to Bodega Bay, underwater between Fort Ross and Bodega Bay.
2. Healdsburg Fault, following a southeasterly direction from a mid-point between Healdsburg and Cloverdale to Santa Rosa.
3. Rogers Creek Fault, east of Petaluma and Rohnert Park in the Rogers Creek and Sonoma Mountain vicinity.

Other faults are present in the County, but are of imprecise location and activity. Related to earthquakes are tsunamis, popularly termed "tidal waves." Small areas around the Russian

River estuary, Bodega Bay, the Estero Americano and the San Pablo Bay shoreline are considered potentially hazardous due to tsunamis.

Landslides and general slope instability present hazards to the preservation of both life and property. Sonoma County has a severe landslide problem, suffering a loss of \$6.4 million in the winter of 1968-69, highest in nine of the Bay Area counties.* Recognizing this perennial condition, the Hazardous Areas Map incorporates several environmental factors relating to slope movement.

Slope instability is due to various geologic and soil conditions. Movement along active faults affects slope stability so the areas along the County's three major active faults are prone to slope failure. Certain geologic formations in the County are made of poorly consolidated rock, another condition affecting slope stability. Notably unstable formations include the Petaluma formation, parts of the Franciscan formation, sand dunes and bay mud. Where these critical geologic formations occur, landslides are likely. In the instance of bay mud, landslides are not the major threat since bay mud is usually in a level terrain. Rather the instability arises from the general weakness of the mud to withstand geologic stress such as earthquake shaking.

Fires and Floods

Fires and floods, two potentially devastating natural phenomena in Sonoma County, are both addressed in the Hazardous Areas Map. A County such as Sonoma cannot afford to ignore the dangerous possibilities of wildfire where residential development and fire-prone vegetation mingle. The disasters in Los Angeles County and near disasters of 1964-65 in the Santa Rosa area bear witness to the significance of California dry-summer fires.

* Taylor, F. A. and E. E. Brabb. "Maps Showing Distribution and Cost by Counties of Structurally Damaging Landslides in the San Francisco Bay Region". Dept. of Interior USGS, Menlo Park, 1972.

When the Open Space Plan, Phase II was being developed, the California State Division of Forestry was revising a system of analyzing fire hazard areas. Since this system was unavailable for the Phase II Plan, a less precise method of determining fire hazard was used. Areas with a recent history of major fires were designated as high fire hazard zones. Since fires generally re-occur in approximately the same areas, this technique will suffice until the revised Division of Forestry system is available.

Flooding of low-lying urban and rural areas is a common, yet expensive problem in many regions of the State including Sonoma County. Communities bordering Russian River and the lower Petaluma River suffer repeated inundation. The Hazardous Areas Map indicates all areas of the County subject to flooding on a 100-year cycle, meaning at least once in one hundred years a major flood can be expected to occur. The threat of flood is gradually being reduced through public works projects by the Corps of Engineers and the County Water Agency and by the establishment of flood plain zoning in certain areas, such as the Laguna de Santa Rosa. Even so, the hazard remains for much of the County.

Sensitive Areas

Although the natural world will obviously survive man, many ecological inter-relationships are very fragile and can be permanently upset, with detrimental side-effects to man. The Sensitive Areas Map was designed to record areas where man's activities would have an impact on the environment that could lead to a deterioration or destruction of the natural eco-balance. In Hazardous Areas, natural forces threaten man; in Sensitive Areas it is man who endangers the natural equilibrium.

Sensitive Natural Processes

The Sensitive Areas Map drew information from fifteen environmental data categories, representing over 120 sub-categories. Several environmental factors dealt with natural processes such as soil erosion, runoff potential, and slope

instability. Many of these categories appeared also in conjunction with the Hazardous Areas Map. Their inclusion in Sensitive Areas is desirable because the mis-management or disregard for these forces can alter the fragile eco-balance sufficiently not only to create hazardous conditions for man, but also to create irreversible changes in the natural environment as well. Severe run-off in an area of steep slopes and high precipitation complicated by man's addition of large areas of impervious paving and construction can contribute significantly to flood destruction. Man's activities in such a situation should be curtailed or modified to minimize the harmful effects on the environment. Similarly, areas of highly unstable slopes are both hazardous to man and sensitive to his presence. Excavation or grading on a weak, unconsolidated geologic formation can cause eventual landsliding.

Sensitive Resources

A second group of factors relating to sensitivity deals not with natural processes, but rather with resources - both natural and cultural. One important natural resource of Sonoma County is the large ground water basin which underlies much of the Santa Rosa, Cotati and Petaluma Plains plus the Valley of the Moon and Alexander Valley. These alluvial valleys composed of stream-deposited materials are loosely consolidated, allowing the percolation of water into the subterranean basin. Such areas are termed "aquifer recharge areas" and must be protected from pollutants and preserved from extensive impervious surfacing. The greater the areas covered with buildings, asphalt and concrete, the less water will seep into the ground water basin. Delimiting these basins satisfies the State law designating "ground water recharge lands as open space lands important to the state in order to maintain the quality of water necessary to the State."

Other resources which are sensitive to human interference are the fields and hills which furnish food, fiber and wood. The categories of Agricultural, Woodland, and Range Capability were included in the consideration of Sensitive Areas. Encroachment of urbanization into pasture and crop lands has produced dramatic changes in land use patterns throughout California. It is estimated that 20,000 acres of agricultural land are converted

SENSITIVE AREAS

DATA CATEGORIES & IMPORTANCE RATIOS

1. Unique Biotic Areas .25
2. Soil Erosion Hazard .99
3. Agricultural Capability .92
4. Vegetation .92
5. Aquifer Recharge Areas .82
6. Slope Instability .81
7. Historical/Archeological Sites .81
8. Woodland Capability .66
9. Runoff .63
10. Hazards .54
11. Existing Land Use .52
12. Slope .45
13. Range Capability .42
14. Rainfall .26

into urban land per year. This trend is apparent in Sonoma County. The loss of highly productive agricultural regions to urban and semi-urban development not only lessens the quality of the environment, it permanently destroys a valuable economic and environmental resource. This attention to lands for resource production is reflected in the state policy that the preservation of open space land is necessary not only for the maintenance of the economy of the state, but also for the assurance of the continued availability of land for the production of food and fiber, for the enjoyment of scenic beauty, for recreation and for the use of natural resources."

Cultural, scientific and educational resources can also react adversely when exposed to the full brunt of urban man. The data categories of Unique Biotic Area (including rare and endangered flora and fauna) and Historical/Archaeological Sites must be considered within Sensitive Areas.

Unique Areas

The State law requiring open space planning emphasizes the identification and protection of areas of ecological, cultural and scientific importance. The Unique Areas Map of the Open Space Plan is based upon eighty environmental factors drawn from nine major data categories. The map identifies resources and characteristics of Sonoma County which are rare or endangered.

Unique Biotic Areas

A portion of the State law reads "wildlife habitat is designated open space land which is unusually valuable or necessary to the preservation or enhancement of the wildlife resources of the state." Following this mandate, a variety of important natural areas relating to the study and preservation of wildlife are included in this data category. Rare and endangered animal species have been recognized recently as worthy of special protection. Habitats which support a wide variety of wildlife such as salt marshes, freshwater marshes, and bays and estuaries are recognized as being crucial to the environment. Examples include the San Pablo Bay salt marshes, the Russian River estuary, Bodega Bay, and the educational and scientific study opportunities (due

to the unique character) of such areas as the Cedars, Camp Meeker Syncline and the Coast. These are included in the Unique Areas Map.

Unique Cultural Resources

A necessary portion of any open space plan involves sites of historical and archaeological significance. Over 1500 of the grid-cells in the Historical/Archaeological sites source map contained known or probable sites. Petaluma and Santa Rosa are especially rich in historical sites, as are areas along the Russian River and Bodega Bay. Archaeological sites are concentrated in areas of Indian settlement. The coastline, Bodega Bay and Russian River provide abundant sites. Springs, stream confluences and marshes throughout the County also contain great archaeological wealth.

State Designated Environmental Resources

Concurrently with State legislation mandating a local open space plan designating environmental resources on a county-wide basis, the State Office of Planning and Research designated environmental resources on a state-wide basis. A number of resources in Sonoma County have been identified by the State report as being in one of the two following categories:

Areas of Statewide Significance

1. They provide an essential resource base for the State's economy (changes in their use may be irreversible or might adversely affect the health, safety and well-being of the total citizenry of the State);
2. They provide a rare or unique environment with resources attractive to people from various parts of the State such as scenic and recreational; and
3. They provide unique cultural or scientific assets that are characteristic of the State.

UNIQUE AREAS

DATA CATEGORIES & IMPORTANCE RATIOS

1. Unique Biotic Areas 2.10
2. Historical/Archeological Sites 1.79
3. Agricultural Capability 1.76
4. Vegetation 1.11
5. Woodland Capability 1.06
6. Aquifer Recharge Areas .90
7. Range Capability .79
8. Hazards .48

Areas of Critical Concern

Areas of CRITICAL CONCERN have been identified because of their limited nature, the threat in a change of land use which would affect them, or because of their unique importance to the welfare of the people of the State. They are areas that are given emphasis and priority within or separate from the general framework of those identified as SIGNIFICANT.

A number of scenic and recreational assets of Sonoma County are valuable enough to be considered critical. Russian River, Gualala River, Bodega Bay and the Laguna de Santa Rosa are examples of areas distinguished for their recreational, scenic or wildlife assets. Another area of critical concern is the prime agricultural soils of the County. In the discussion of Sensitive Areas, agricultural land was mentioned as being "sensitive" to man and his urbanizing trends. Prime soils, Classes I and II (approximately 84,000 acres) according to the Soil Conservation Service system, are of a very limited extent, both in Sonoma County and the state and nation. Prime agricultural soil is capable of producing a wide range of crops with few limitations. Such soils cannot be replaced when converted to other uses. Hence, they are not only sensitive to encroachment, but are a unique and irreplaceable resource.

DEVELOPMENT OF SUITABILITY MAPS

Environmental sensitivity maps and the interim open space zoning map generated from them satisfy most of the mandates of the State planning law. These maps were developed according to the physical environmental factors of Sonoma County. Excepting sites of historical and archaeological importance, no aspects of the human environment or society were analyzed. Such an analysis and integration of physical and human environmental forces will be accomplished during the remaining portion of Phase II and during Phase III.

The development of six land use suitability maps will be the next step of Phase II. The Delphi Committee has spent consider-

able time and energy participating in a series of sessions aimed at determining the suitability of land for six uses. From these sessions came six computer maps indicating how the citizens' values would locate certain land uses. The completion of Phase II will see these maps compared with the Sensitivity Maps to reveal areas of potential conflict. Physical environmental factors and social factors will then have been joined.

A further integration of physical and human conditions will be achieved during Phase III when the open space element and the other elements of the General Plan (transportation, housing, etc.) are compared and integrated.

* The following chart shows the importance ratios the planners and the citizens attached to the data categories used to develop the three Environmental Sensitivity Maps. The chart also shows the numerical difference between the planners' values and the citizens' values and the averaged importance ratios. These averaged importance ratios determined the make-up of the Sensitivity Maps.

In order to facilitate the computer mathematics, all numbers were "normalized" or adjusted to fit a 10-point scale. The normalization of the figures accounts for the apparent discrepancy found in certain averages.

Example: Sensitive Areas

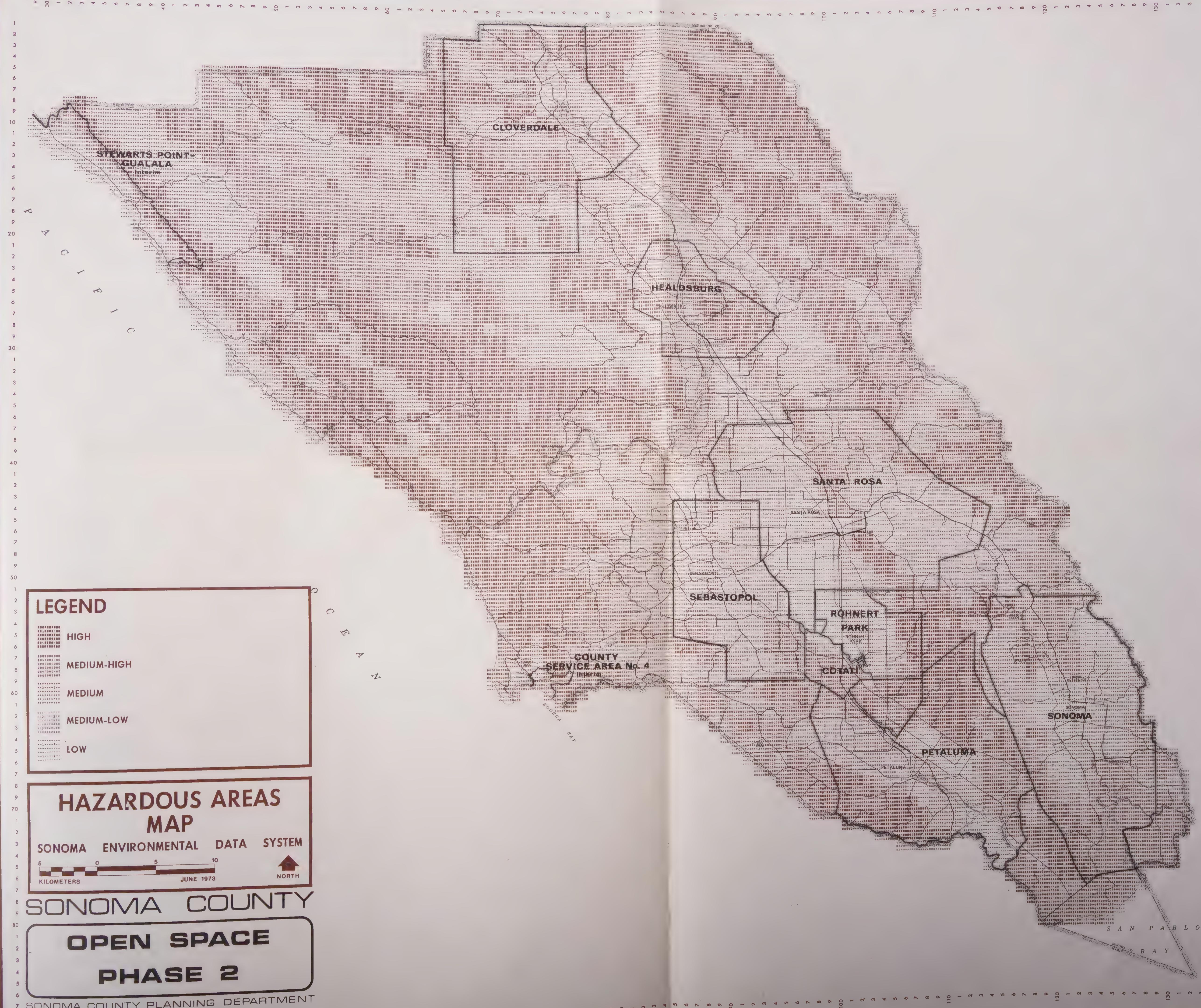
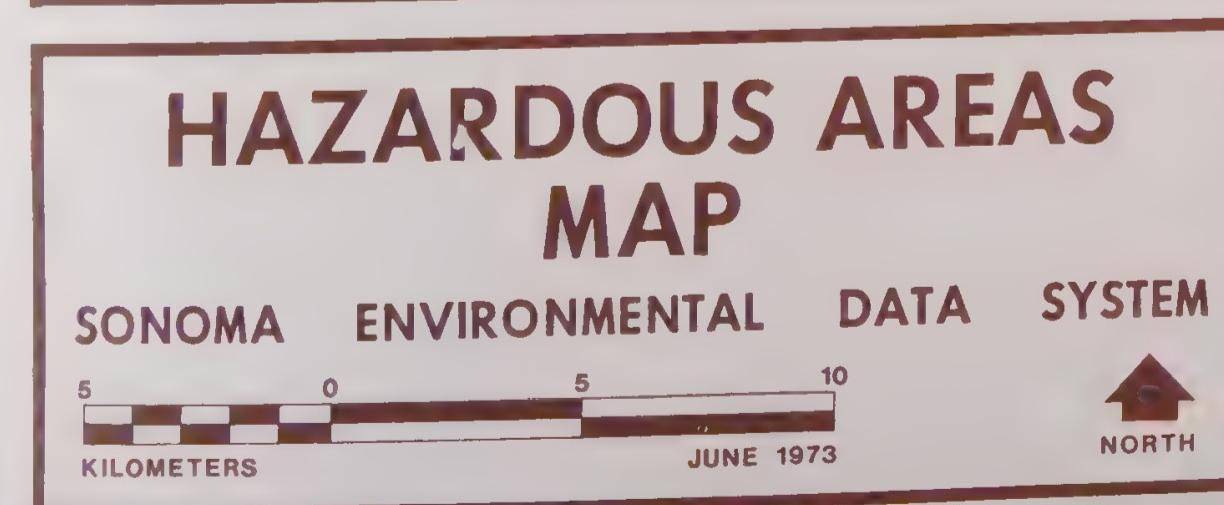
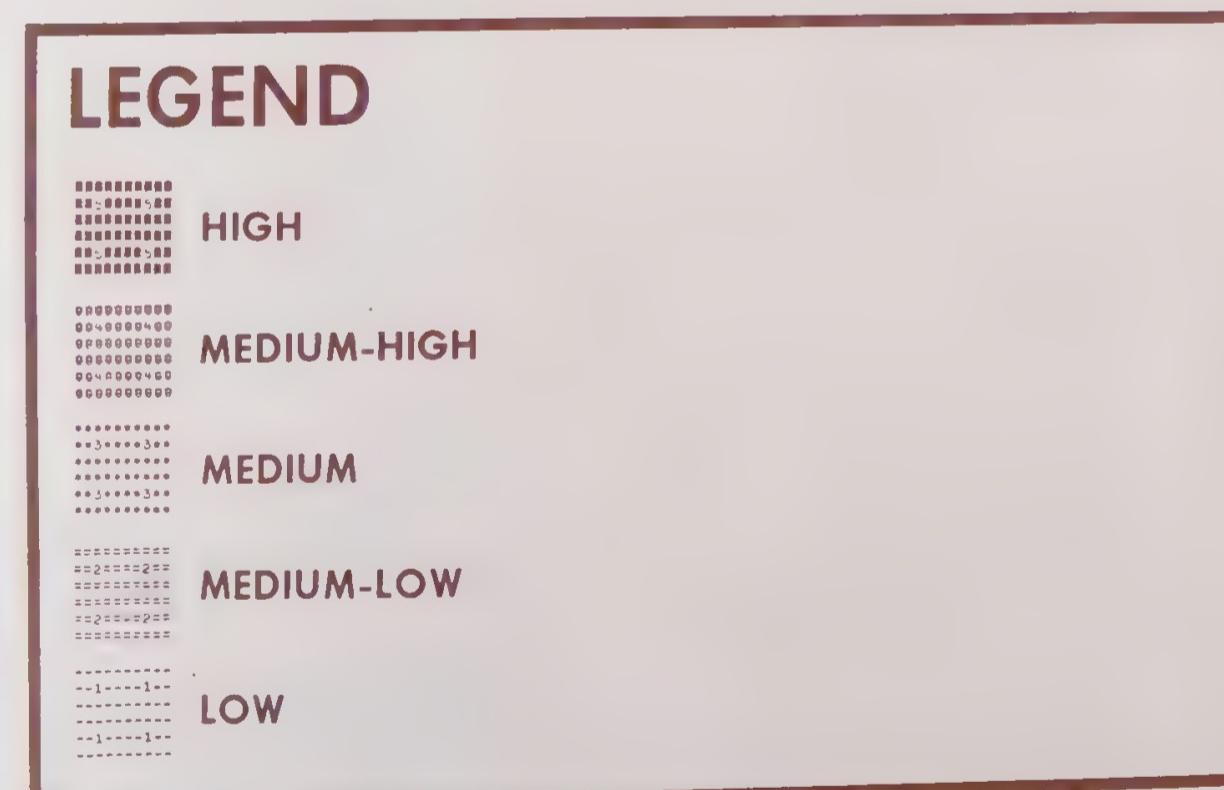
Slope	<u>Planners I.R.</u>	<u>Normalized</u>	<u>Citizens I.R.</u>	<u>Normalized</u>
	2.33	.23	6.34	.63
	<u>Average I.R.</u>	<u>Normalized</u>		
	4.3	.45		

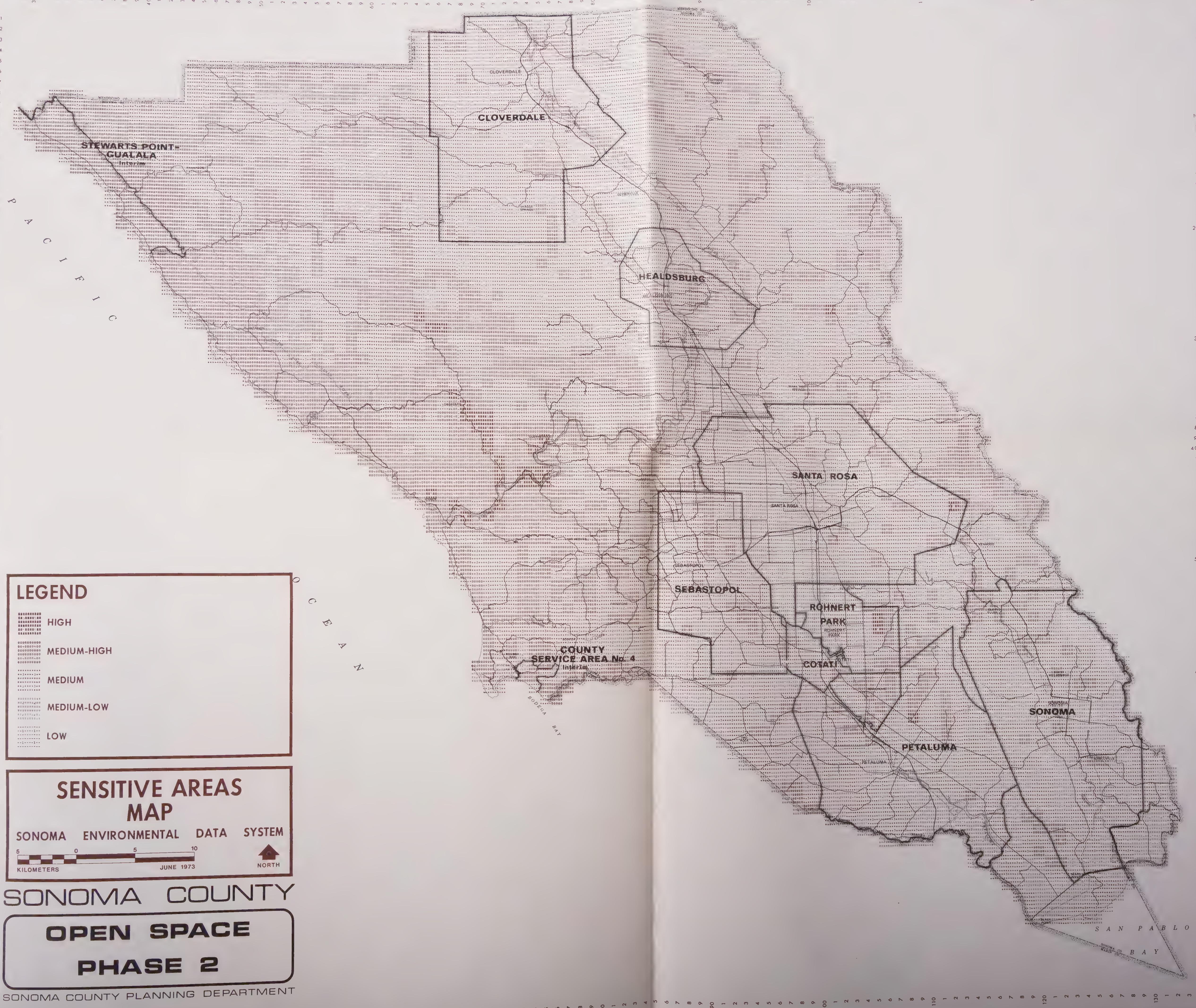
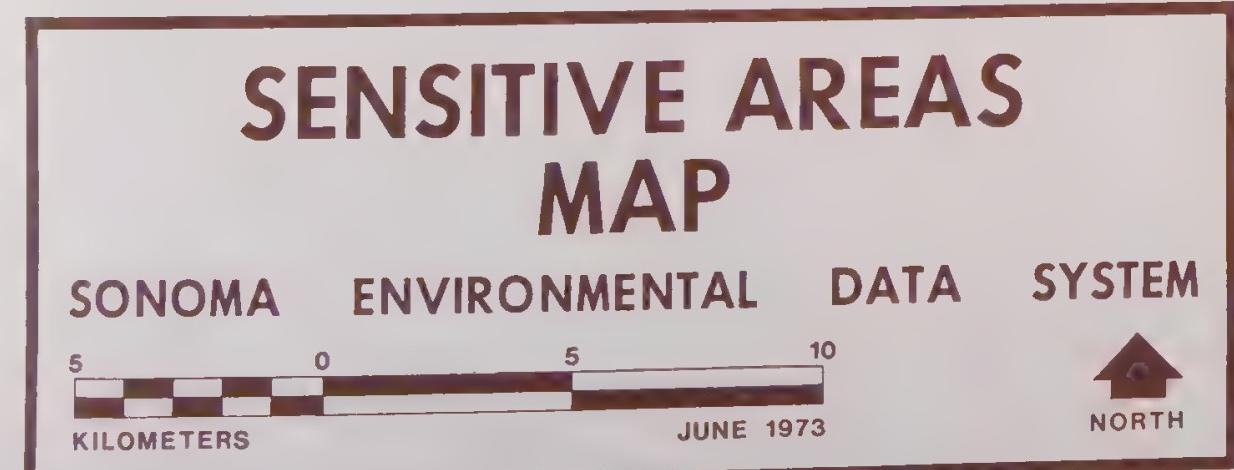
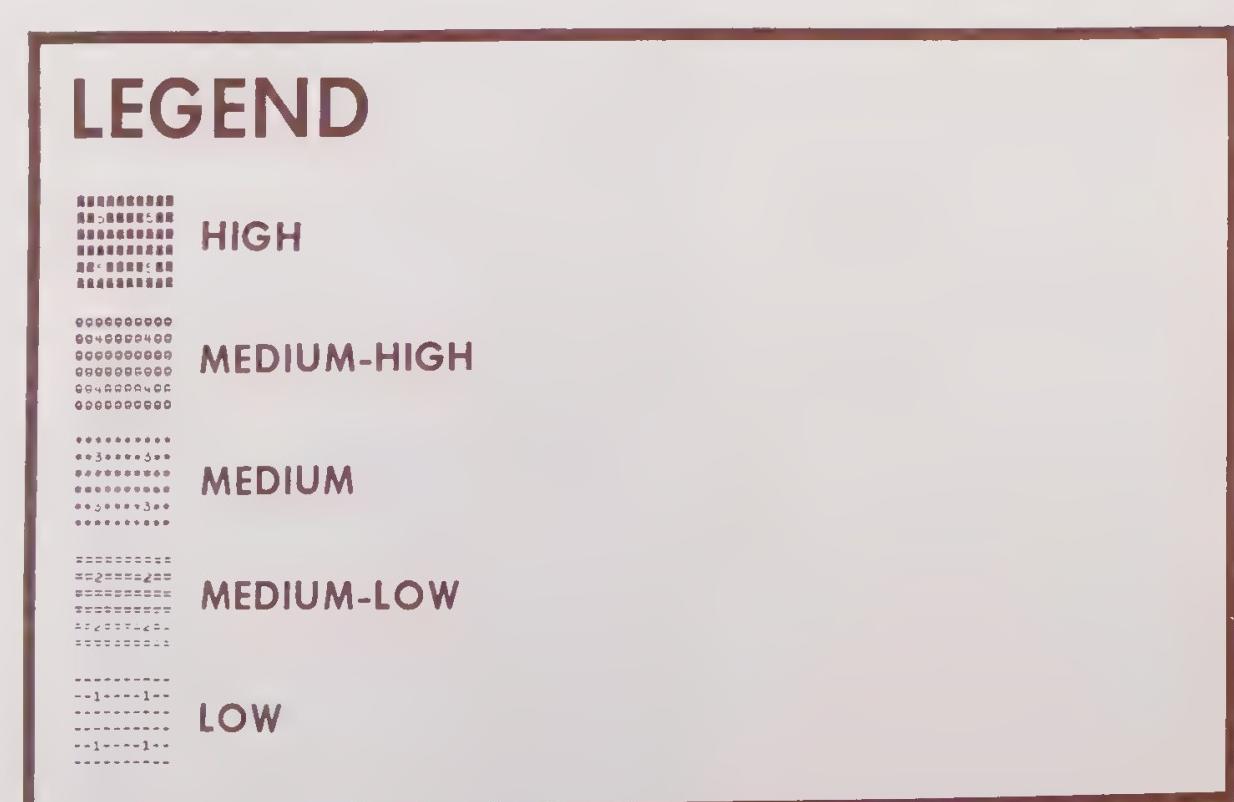
The Planners and Citizens Importance Ratios are normalized by dividing the figure by 10. The average is normalized by dividing the figure (4.3) by the sum of Importance Ratios under Sensitive Areas (96.7) and multiplying by 10.

Normalization preserves the ratio of one figure to another, it simply changes the sum.

$$\frac{4.3}{96.7} * .044467 \times 10 = .445 * .45$$

$$4.3 : 96.7 :: .45 : 10.0$$





LEGEND

- HIGH
- MEDIUM-HIGH
- MEDIUM
- MEDIUM-LOW
- LOW

UNIQUE AREAS MAP

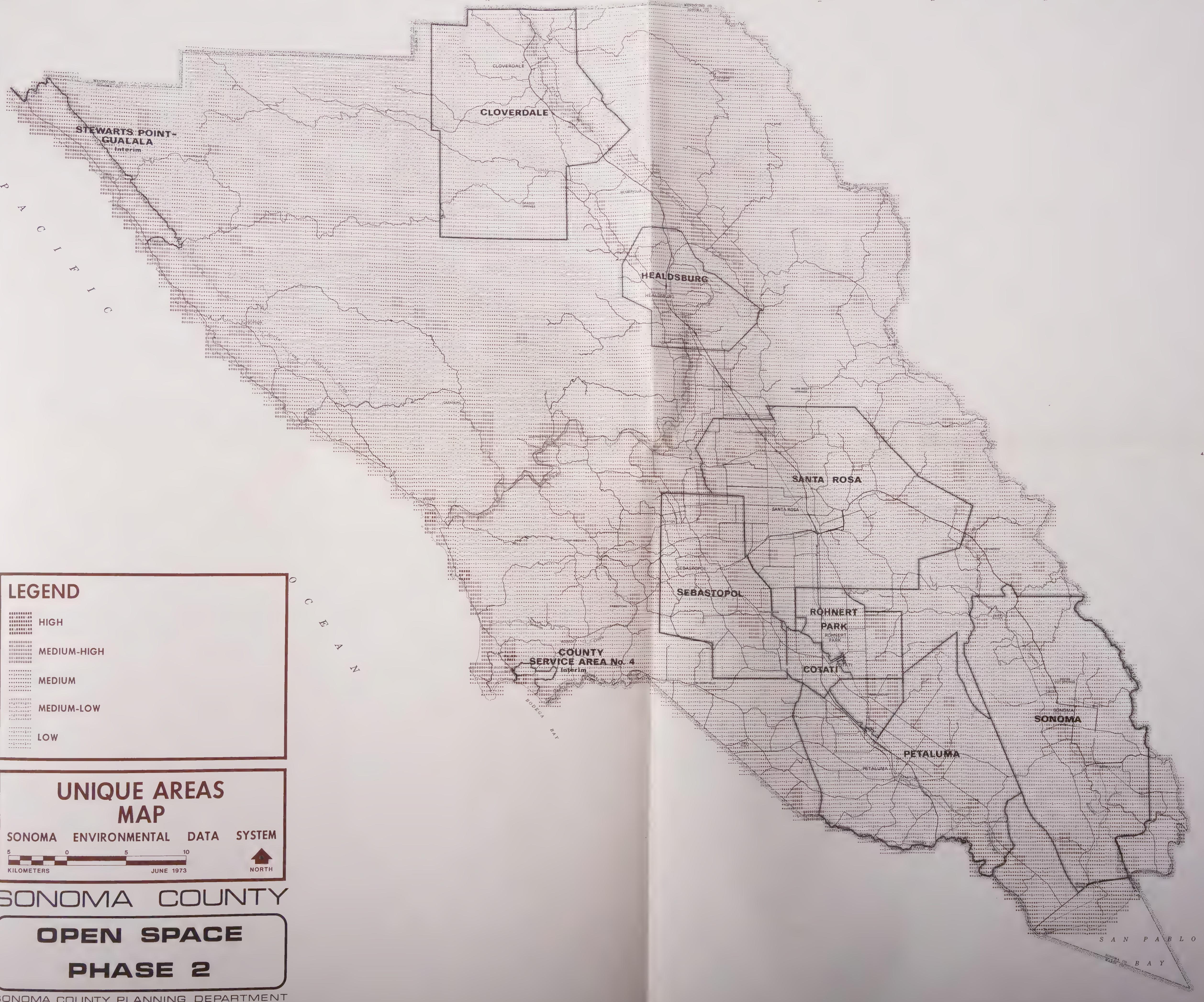
SONOMA ENVIRONMENTAL DATA SYSTEM



SONOMA COUNTY

**OPEN SPACE
PHASE 2**

SONOMA COUNTY PLANNING DEPARTMENT



IMPORTANCE RATIOS

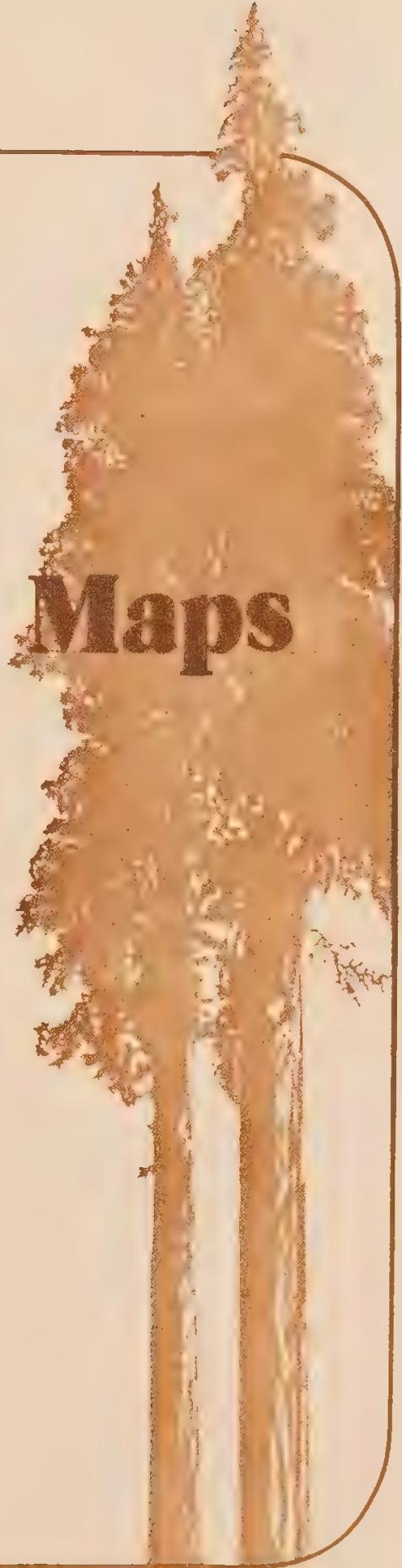
Normalized on 10-point scale

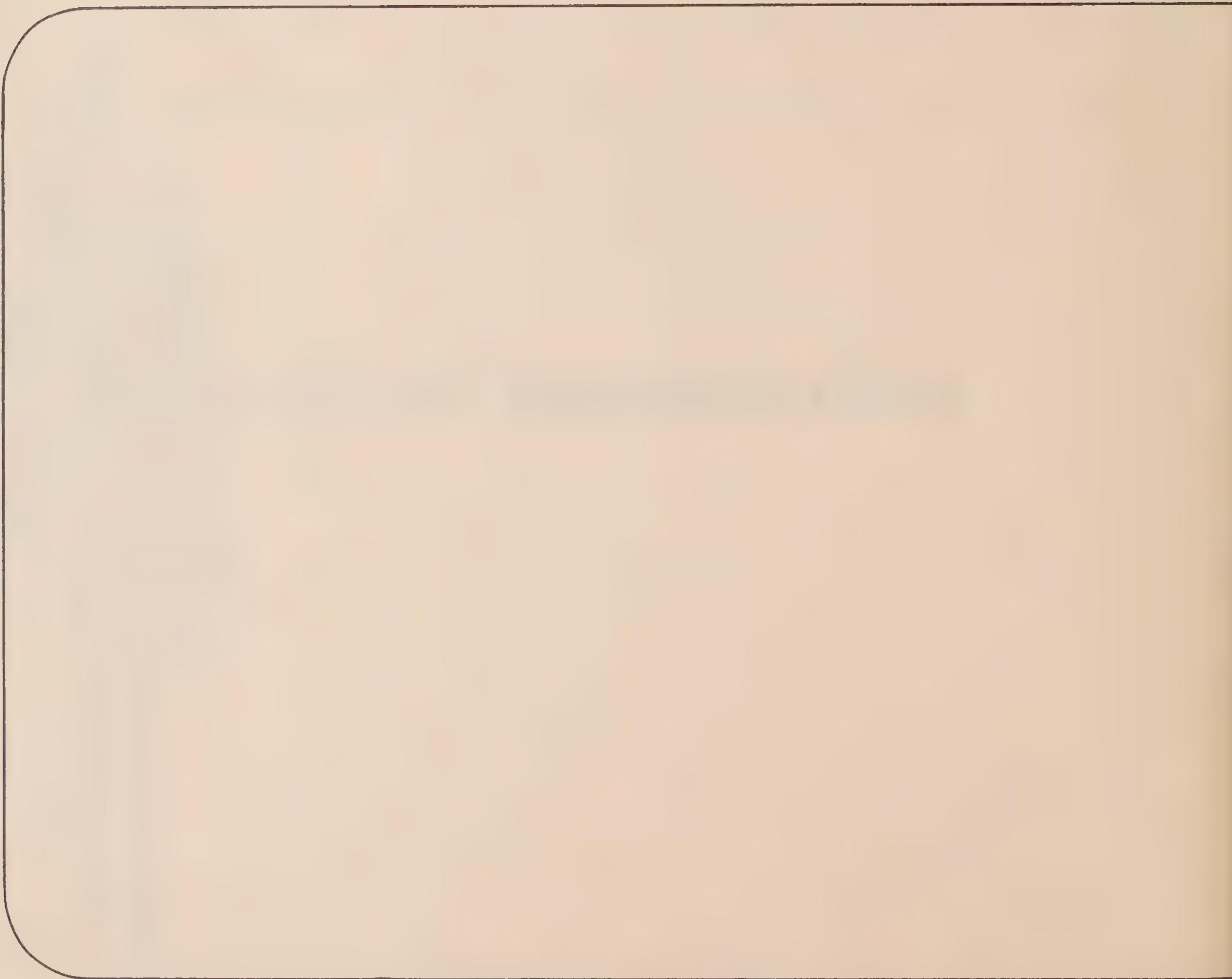
	Planners'	Citizens'	Difference	Average	Planners'	Citizens'	Difference	Average	Planners'	Citizens'	Difference	Average
1. Slope	.73	1.40	.67	1.07	.23	.63	.40	.45				
2. Hazards	2.30	2.75	.45	2.52	.52	.53	.01	.54	.38	.48	.10	.48
3. Soil Erosion Hazard	1.61	1.42	.19	1.52	.99	.92	.07	.99				
4. Soil Shrink/Swell	1.04	.81	.23	.92								
5. Slope Instability	1.93	1.90	.03	1.91	.75	.83	.08	.82				
6. Soil Pressure Limitations	.62	.70	.08	.66								
7. Public Water Systems												
8. Well Yield												
9. Aquifer Recharge Areas					.86	.73	.13	.82	.89	.74	.15	.90
10. Rainfall	.52	.33	.19	.42	.36	.14	.22	.26				
11. Hydrological Groups	1.26	.70	.56	.98	.83	.39	.44	.63				
12. Vegetation					.82	.92	.10	.92	1.02	.98	.04	1.11
13. Unique Biotic Areas					1.13	1.29	.16	1.25	1.82	1.97	.15	2.10
14. Land Use					.41	.60	.19	.52				
15. Dwelling Unit Density (Zoning)												
16. Historical/Archaeological Sites					.66	.91	.25	.81	1.49	1.75	.26	1.79
17. Mineral Resources					.33	.34	.01		1.13	.81	.32	
18. Range Capability					.30	.52	.22	.42	.64	.80	.16	.79
19. Woodland Capabil.					.72	.55	.17	.66	.93	.99	.06	1.06
20. Agricul. Capabil.					.66	.73	.07	.92	1.49	1.48	.01	1.76
	Hazardous Areas (Public Health and Safety)				Sensitive Areas (Fragile Eco-Balance)				Unique Areas (Rare or Endangered)			

CHAPTER

4

Environmental Source Maps





ENVIRONMENTAL SOURCE MAPS

This section of the report includes eleven of the environmental source maps generated for the Phase II Open Space Plan. These eleven maps serve a dual purpose:

1. They contributed to the preparation of the three Environmental Sensitivity Maps of Sonoma County.
2. They satisfy State law requiring the identification of certain specific open space conditions and characteristics of the County.

Accompanying each map is a brief discussion of the map - what information is shown, what significance that information has, and what sources provided the data. In addition a chart shows:

1. Each sub-category comprising the map.
2. Which Sensitivity Maps this source map contributed to.
- * 3. The Importance Ratio(s) attached to this source map.
- ** 4. The Planning values attached to each sub-category.
5. The number of cells comprising each sub-category.
6. The percentage of the County covered within each data sub-category.

In addition to requiring an Open Space Element and a consistent open space ordinance, State law requires that certain aspects of a County's environment be identified and mapped. Twenty maps were compiled for the preparation of Sonoma County's Open Space Element. Several of these maps also satisfied the second State mandate. Those maps are examined in this chapter.

* Importance Ratios are on a 10-point scale. The total importance ratios of a Sensitivity Map equal 10.0

** Planning Values are on a 9-point scale, 9 representing the highest value.

Open Space Requirements AB 966

1. Preservation of Natural Resources

- Plant and animal life and habitats
- Ecological and scientific study areas
- Rivers, streams, bays and estuaries
- Coastal beaches, lakeshores, rivers, stream banks and watershed lands.

Source Maps

Unique Biotic Areas and Vegetation Map

2. Managed Production of Resources

- Forest lands
- Rangeland
- Agricultural lands
- Recharge Areas
- *- Commercial fishery areas in bays, estuaries, marshes, rivers and streams
- Major mineral deposit areas

Woodland Capability Map

Range Capability Map

Agricultural Capability Map

Aquifer Recharge Areas Map

Mineral Resources Map

* Commercial fisheries were explored in detail during Phase I of the Open Space Plan. The Natural Resources Inventory of the Interim Open Space Plan details the commercial fishing industry of Sonoma County.

Open Space Requirements AB 966

Source Maps

3. Open Space for Outdoor Recreation

* - Scenic, historic and cultural value

Historical/Archaeological Map

* - Park and recreation areas

Park and Recreation Lands Map

* - Access to lakeshores, beaches rivers and streams

* - Links for major recreation and open space areas, e.g. utility easements, stream banks, trails

4. Public Health and Safety

- Fault zones

Hazards Map

- Unstable soil areas

Slope Instability Map

- Flood plains

Unique Biotic Areas and Vegetation Map

- Watersheds

- Areas of high fire risk

Hazards Map

* A scenic analysis of the County will be conducted during the coming fiscal year. This analysis will be a part of the Scenic Highways Element, also prepared during FY 1973.

Open Space Requirements AB 966

Source Maps

- * - Areas for protection of water quality and reservoirs
 - * - Air quality protection
-

* During Phase II, criteria for park site selection was developed and a land use suitability map for park and recreation lands is being prepared. Once potential park sites are chosen, connecting links and access routes will be determined.

The following pages show the cell count for each data category and the approximate percentage of the County covered. During the initial development stages of the grid-based environmental data system, much discussion centered upon the size of the grid-cells. It was recognized that the cells should not be too large, thus requiring gross generalization of data, nor too small, exceeding time and money resources of the County.

A grid-cell size of 1000 meters square, approximately 250 acres, was chosen for two reasons: The Universal Transverse Mercator lines on USGS quadrangle sheets can be used to define each 1000 meter grid cell, aiding both the mapping of data and the identification of specific sites in specific cells. Secondly, the 250 acre size is small enough to allow relatively detailed determination of environmental characteristics while not overburdening the County's time and money resources. At this level of grid-cell size, over 5,500 cells were used. During Phase III, the 250 acre grid-cells can be easily subdivided into 10 acre cells for more detailed study of significant areas. To map the County initially at a 10 acre grid-cell size would have meant 25 times the cells and the work load.

Unique Biotic Areas

Description

It is important that there be a rudimentary understanding of the complex relationship between man, species of vegetation and wildlife. Not infrequently a delicate ecological imbalance can be upset by a small change in the physical environment, sometimes with long term consequences on food production or the existence of a particular wildlife species. Information on wildlife necessary for planning purposes will show the nature, type and extent of wildlife species and their habitats.

Wildlife resources act as a barometer for the quality of the environment for man. This, along with the fact that hasty wildlife management can lead to increases in undesirable animal species, loss of desirable plant species, and other ecological imbalances, requires the study of wildlife. Section 21001 of the California Environmental Quality Act of 1970 directs that the State prevent the elimination of fish or wildlife species due to man's activities and preserve for future generations representations of all plant and animal communities as examples of the major periods of California history.

This source map delimits the areas of Sonoma County that have some special natural or ecological significance. Critical wildlife habitats, important or unique plant associations, and unusual geologic formations are included under this subject.

The critical habitats mapped are:

- a. Flood plains
- b. Coastal habitat - coastal prairies, dunes and intertidal areas
- c. Coastal bays and river estuaries
- d. Salt marshes - e.g., bordering San Pablo Bay and Bodega Bay
- e. Freshwater marshes - Pitkin Marsh, Laguna de Santa Rosa, etc.
- f. Riparian vegetation - woods bordering streams

This map also notes

- g. Biogeographically Unique Areas - areas of biological, geographical, or geologic uniqueness in the County, including sites of rare and endangered plants, Cooper's Grove, Mt. Hood, etc.
- h. Natural areas - areas of natural interest that are now preserved as private property or proposed for preservation, such as lower Tubbs Island and some small acreages owned by the Audubon Society.

Sources

The Unique Biotic Areas Map was prepared by the Natural Biological Resources Sub-Committee of the Citizens' Open Space Committee. Professor Philip Northen of Sonoma State College is chairman of this sub-committee. Allan Buckmann, the district wildlife biologist of the State Department of Fish and Game was an important contributor to the sub-committee's map.

STATISTICAL SUMMARY

<u>Unique Biotic Areas</u>	<u>Cells</u>	<u>Approx. % of Co.</u>
No known unique characteristics	2,333	54.0
Flood plains	356	8.2
Coastal habitats, bays & estuaries	160	3.7
Salt marshes	101	2.3
Fresh water marshes	26	0.6
Riparian vegetation	831	19.2
Biogeographically unique areas	266	6.2
Existing or proposed natural areas	24	0.6
Osprey habitat	183	4.2
Mixed unique areas	40	0.9

<u>UNIQUE BIOTIC AREAS - Planning Values</u>	<u>Sensitive Areas</u>	<u>Unique Areas</u>
IMPORTANCE RATIOS	1.25	2.10
No data	1	1
Flood plains	7	4
Coastal habitat	7	9
Bays and estuaries	7	8
Salt Marshes	8	9
Freshwater marshes	9	9
Riparian Vegetation	7	7
Biogeographically unique areas	9	9
Existing or proposed natural areas	8	8
Osprey Habitat	7	9
Flood plains and riparian vegetation	7	8
Flood plains & biogeographically unique areas	9	9
Freshwater marshes & biogeographically unique areas	9	9
Existing or proposed natural areas and biogeographically unique areas	9	9

LEGEND

- MIXED UNIQUE AREAS
- OSPREY HABITAT
- EXISTING OR PROPOSED NATURAL AREAS
- BIO-GEOGRAPHICALLY UNIQUE AREAS
- RIPARIAN VEGETATION
- FRESH WATER MARSHES
- SALT MARSHES
- COASTAL HABITATS, BAYS AND ESTUARIES
- FLOOD PLAINS
- NO KNOWN UNIQUE CHARACTERISTICS

UNIQUE BIOTIC AREAS MAP

SONOMA ENVIRONMENTAL DATA SYSTEM



5 0 5 10

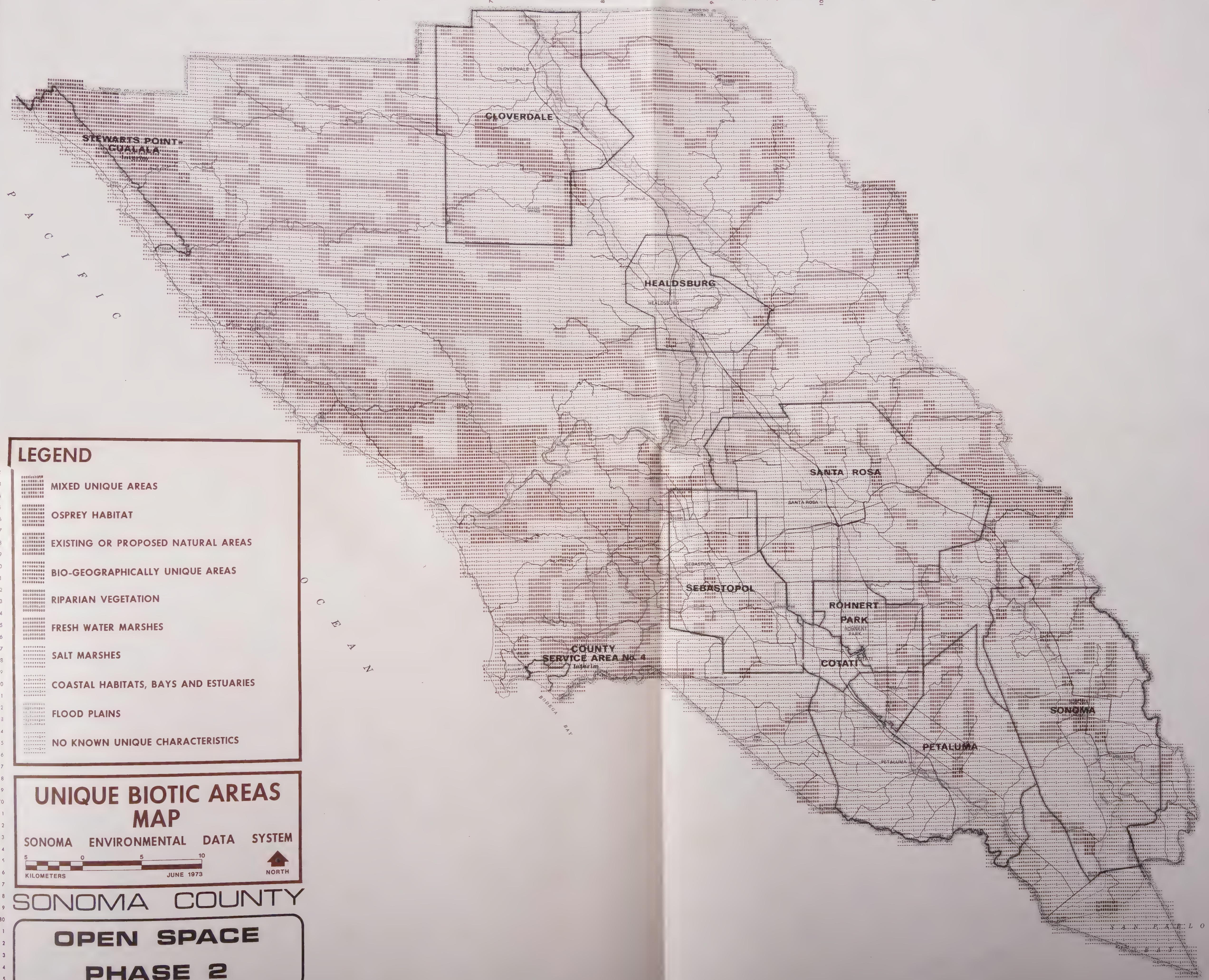
KILOMETERS

JUNE 1973

SONOMA COUNTY

OPEN SPACE
PHASE 2

SONOMA COUNTY PLANNING DEPARTMENT



Vegetation

Description

Vegetation plays several important roles in the life of Sonoma County. Natural vegetation serves as a ground cover in watersheds, as habitat for wildlife, and a protector and producer of soils. It also contributes to the scenic qualities of the County, whether the timbered coastal hills or the shaded stream banks of the Santa Rosa Plain.

Two major floral life zones overlap in the County - the Transitional Zone (coniferous forests, etc.) and the Upper Sonoran Zone (grasslands, chaparral, etc.). This situation provides Sonoma County with unique vegetational resources. Fifteen vegetation associations are present in Sonoma County due to the meeting of these two floral zones. These fifteen associations are generalized into nine groups on the Vegetation Map.

a. Coastal prairies, dunes, sand and brush:

- prairies (grasslands) along Highway 1 between Bodega Bay and Jenner are good examples.
- exemplified by sand dunes adjacent to tideland, such as Salmon Creek.
- brush occurs in the same vicinity as prairies, but on dry, rocky slopes.

b. Tidal water areas and salt marshes:

- tidelands consist of rocky beaches and tide pools the length of the coast.
- salt marshes are found fringing San Pablo Bay, Bodega Bay and the Estero Americano.

c. Coniferous forests:

include Bishop Pine areas of the coast (Salt Point State Park), Douglas fir forests of the northern end of the County, and the Redwood forests of the Mendocino High-lands.

d. Hardwood, mixed forest and woodland:

a combination of three communities, ranges from the rather dense oak/laurel woods typified around Sonoma Mountain to the open oak and grassland association exemplified east of the Laguna de Santa Rosa. Also includes a mix of hardwood and conifer.

e. Chaparral:

chaparral vegetation is common in the rocky and drier regions of the Mayacama Mountains and the Valley of the Moon. Serpentine chaparral occurring in the Cedars area is included in this classification.

f. Freshwater areas and riparian woodland:

this community includes various hardwoods and shrubs growing in association with permanent water courses. The Russian River flood plain is the best example.

g. Grasslands:

the most extensive single vegetation community of the County, it is essentially treeless, often supporting livestock grazing.

h. Forage crops:

cultivated fields devoted to hay, alfalfa, etc.

i. Orchards and vineyards

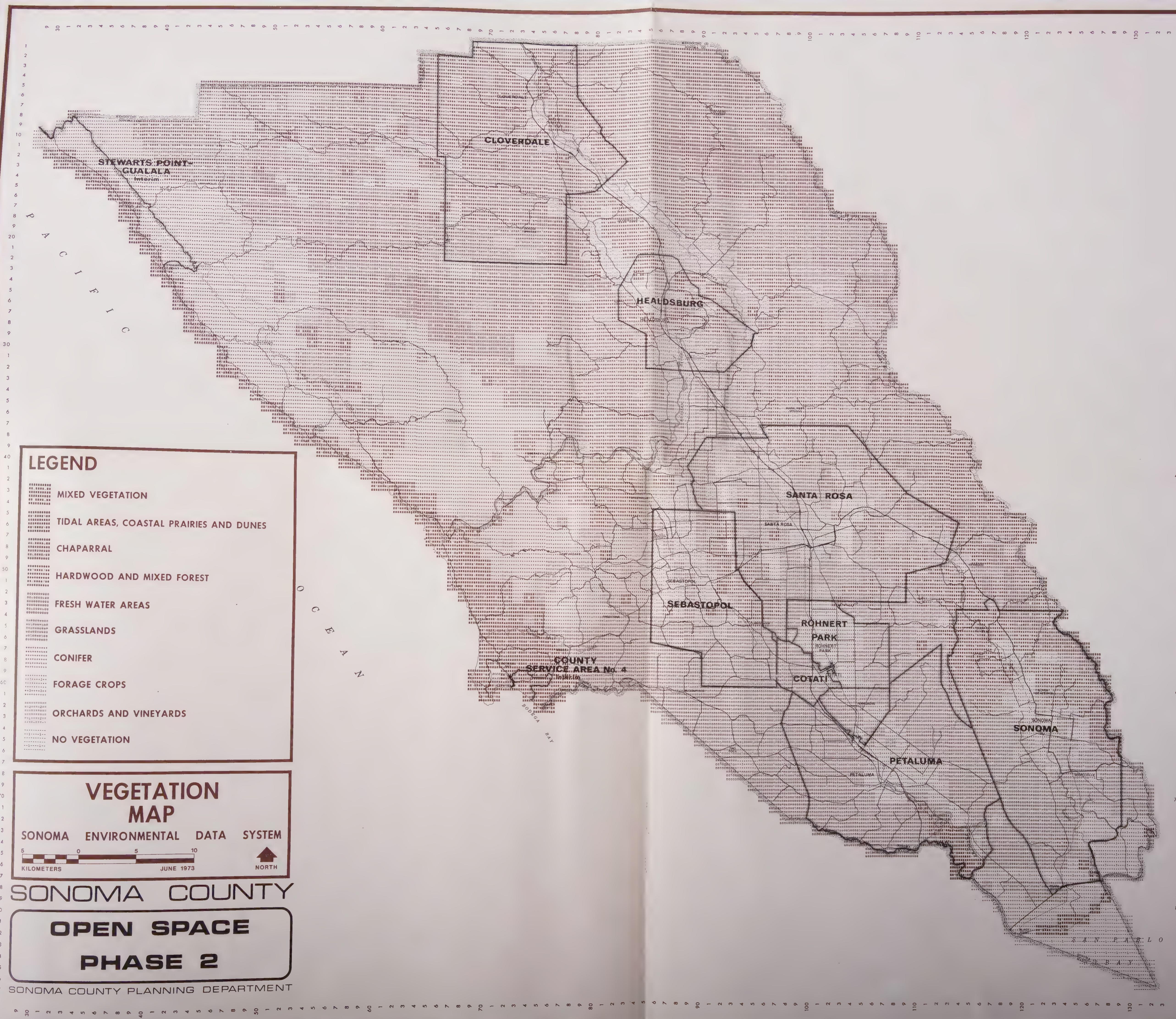
Source - USGS Earth Resource System

VEGETATION - Planning Values

	Sensitive Areas	Unique Areas
IMPORTANCE RATIOS	.92	1.11
Orchard and Vineyards	6	8
Forage Crops	2	7
Coniferous forests	7	8
Grassland	2	5
Freshwater marsh, riparian veg., water	8	8
Hardwood, mixed forest, woodland	4	2
Chaparral, serpentine chaparral	1	1
Tidal community, salt marsh	9	9
Coastal prairies, sand dunes, brush	8	8
Mixed vegetation (3 types, none over 30%)	8	8

STATISTICAL SUMMARY

Vegetation	Cells	Approx. % of Co.
No vegetation	122	2.8
Orchard & vineyards	249	5.9
Forage crops	176	4.1
Conifer	624	14.4
Grasslands	1,086	25.1
Fresh water areas	8	0.2
Hardwood & mixed forest	1,562	36.2
Chaparral	235	5.4
Tidal areas, coastal prairies and dunes	202	4.9
Mixed vegetation	56	1.3



Agricultural Capability

Description

This map and the two subsequent maps, Range and Woodland Capability, were derived from the Soil Conservation Service's Soil Survey of Sonoma County. The County is mapped in the Survey as containing over 260 individual soil types, comprising some 70 soil series. A soil series map was generated from this information, showing the dominant (by area covered) soil series present in each 250-acre grid-cell.

Soil types are grouped by the Soil Conservation Service into eight capability classes, indicating the relative suitability of each soil for the economic production of most common crops. Soils are grouped according to their limitation for production, their susceptibility to damage, and the manner in which they respond to conservation treatment. Since the soil map developed for the Open Space Element mapped generalized soil series, rather than soil types, the agricultural capability classes were also generalized.

- a. High capability - soil series that are composed predominantly of Capability Classes I and II, corresponding to Prime Agricultural Lands. These soils offer the fewest limitations to choice of plants, provide the best crop, and require only moderate conservation measures.
- b. Medium capability - soil series of Classes III and IV, having average agricultural capability and imposing average limitations.

- c. Low capability - Classes VI, VII and VIII soils with severe limitations to cultivation.
- (Sonoma County contains no agricultural capability Class V soils.)

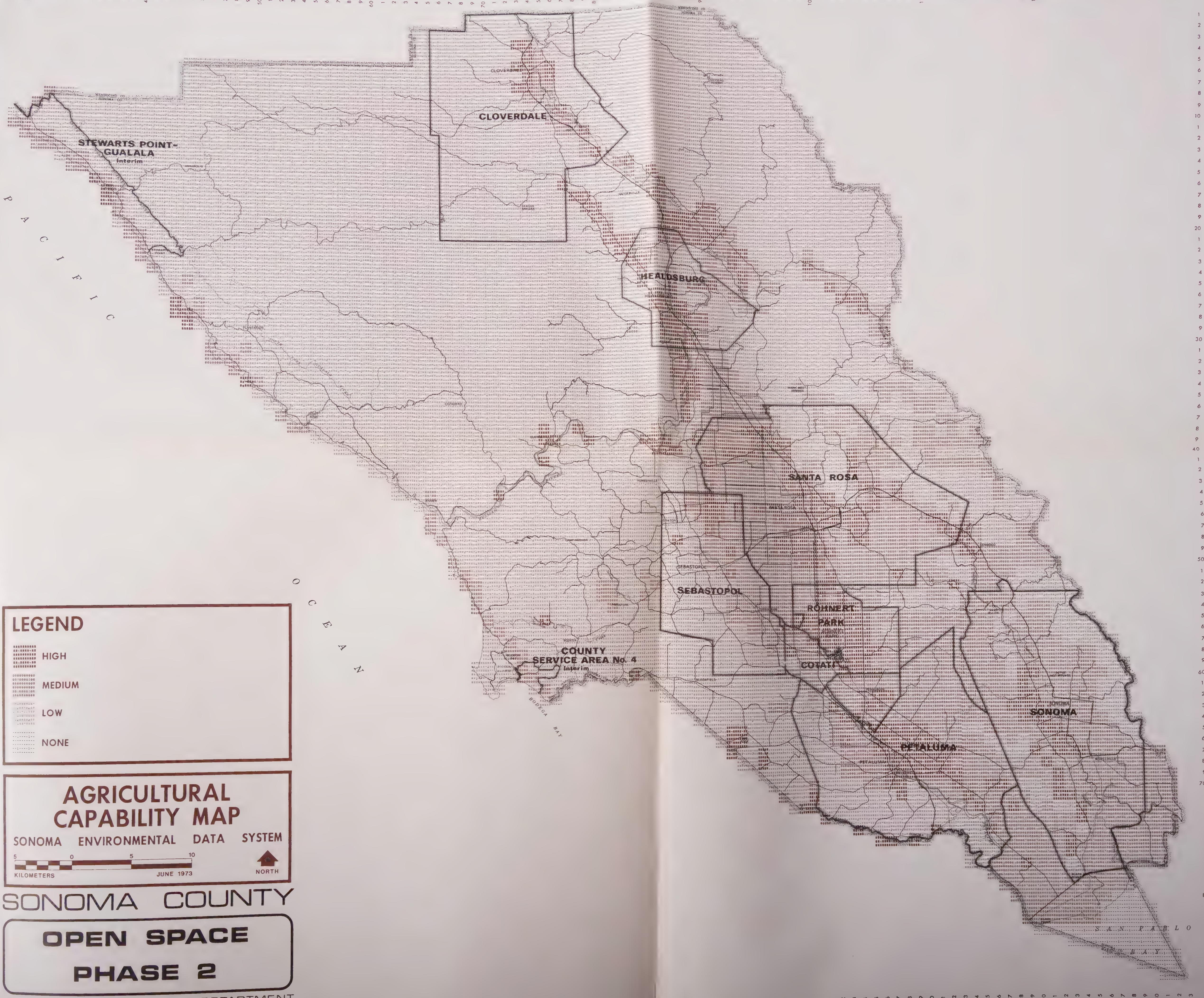
Sources

U.S. Department of Agriculture, Soil Conservation Service,
Sonoma County Soil Survey.

<u>AGRICULTURAL CAPABILITY-Planning Values</u>	<u>Sensitive Areas</u>	<u>Unique Areas</u>
<u>Importance Ratios</u>	.92	1.76
High	9	9
Medium	7	7
Low	3	3
None	1	1

STATISTICAL SUMMARY

<u>Agricultural Capability</u>	<u>Cells</u>	<u>Approx % of C</u>
High	369	8.5
Medium	956	22.1
Low	2,943	68.2
None	52	1.2



SONOMA COUNTY

OPEN SPACE

PHASE 2

SONOMA COUNTY PLANNING DEPARTMENT

Woodland Capability

Description

The soils of the County used for wood crops have been placed in nine woodland capability groups similar to agricultural and range capability. Soils are grouped on the basis of characteristics such as seedling mortality, plant competition, and wind-throw hazard, which affect the growth of commercial coniferous timber, such as redwood and Douglas fir. Each capability class comprises soils requiring similar management practices and having similar productivity for wood crops.

- a. High - soils in woodland capability classes #1, #2, and #8.
- b. Medium - soils in woodland capability classes #3, #4, #5, and #6.
- c. Low - woodland capability classes #7 and #9, the least production potential.
- d. None - soils not rated for any woodland productivity (generally rated instead for range capability).

Source

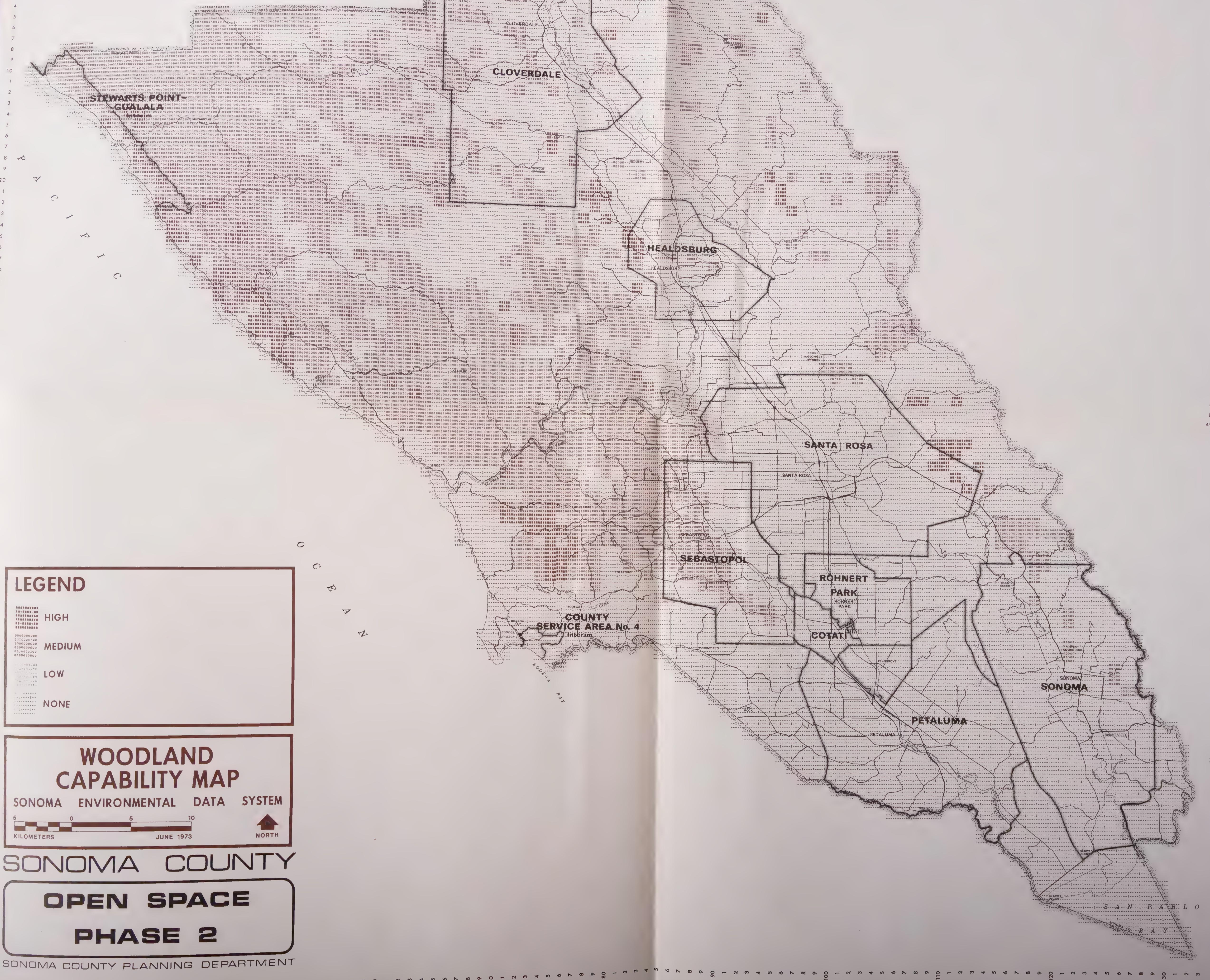
USDA Soil Conservation Service, Soil Survey of Sonoma County.

WOODLAND CAPABILITY - Planning Values

IMPORTANCE RATIOS	Sensitive Areas	Unique Areas
	.66	1.06
High	9	9
Medium	7	6
Low	3	3
None	1	1

STATISTICAL SUMMARY

<u>Woodland Capability</u>	<u>Cells</u>	<u>Approx. % of County</u>
High	117	2.7
Medium	1,189	27.5
Low	5	0.1
None	3,009	69.7



Range Capability

Description

The soil series of Sonoma County used for livestock grazing are grouped by the Soil Conservation Service into twelve range capability classes. Each class differs in its ability to produce different kinds and amounts of vegetation and in the management practices required.

The annual production of forage is estimated for each of the twelve classes both for years of favorable moisture and for years of unfavorable moisture. An average annual forage production figure was derived for each range capability class, enabling the ranking of soil series according to their range productivity.

- a. High - Soil series within the three most productive range capability classes.
- b. Medium - Soil series within the six moderately productive range classes.
- c. Low - Soil series falling in the three least productive range capability classes.
- d. None - Those soil series with no rating for range-land productivity.

The protection of productive livestock grazing land is crucial for the dairy industry of Sonoma County. Loss of

good rangeland has forced County dairymen to import feed grown in the Central Valley. The continued conversion of high quality rangeland to other uses could mean the migration of dairying from Sonoma County to areas of the state with more extensive and economical grazing resources.

Sources

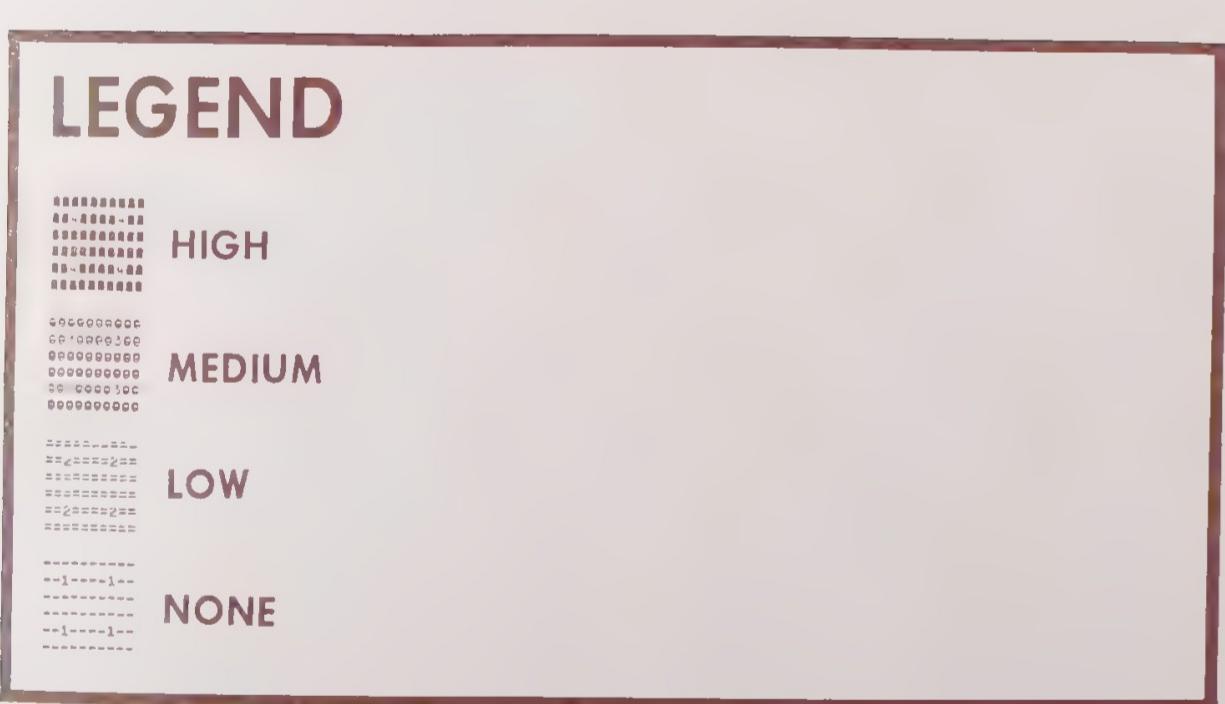
U. S. Department of Agriculture, Soil Conservation Service,
Soil Survey of Sonoma County.

RANGE CAPABILITY -
Planning Values

		Sensitive Areas	Unique Areas
IMPORTANCE RATIOS	.42	.79	
High	9	9	
Medium	6	5	
Low	3	2	
None	1	1	

STATISTICAL SUMMARY

<u>Range Capability</u>	<u>Cells</u>	Approx. % of Co.
High	441	10.2
Medium	2,139	49.6
Low	352	8.1
None	1,388	32.1

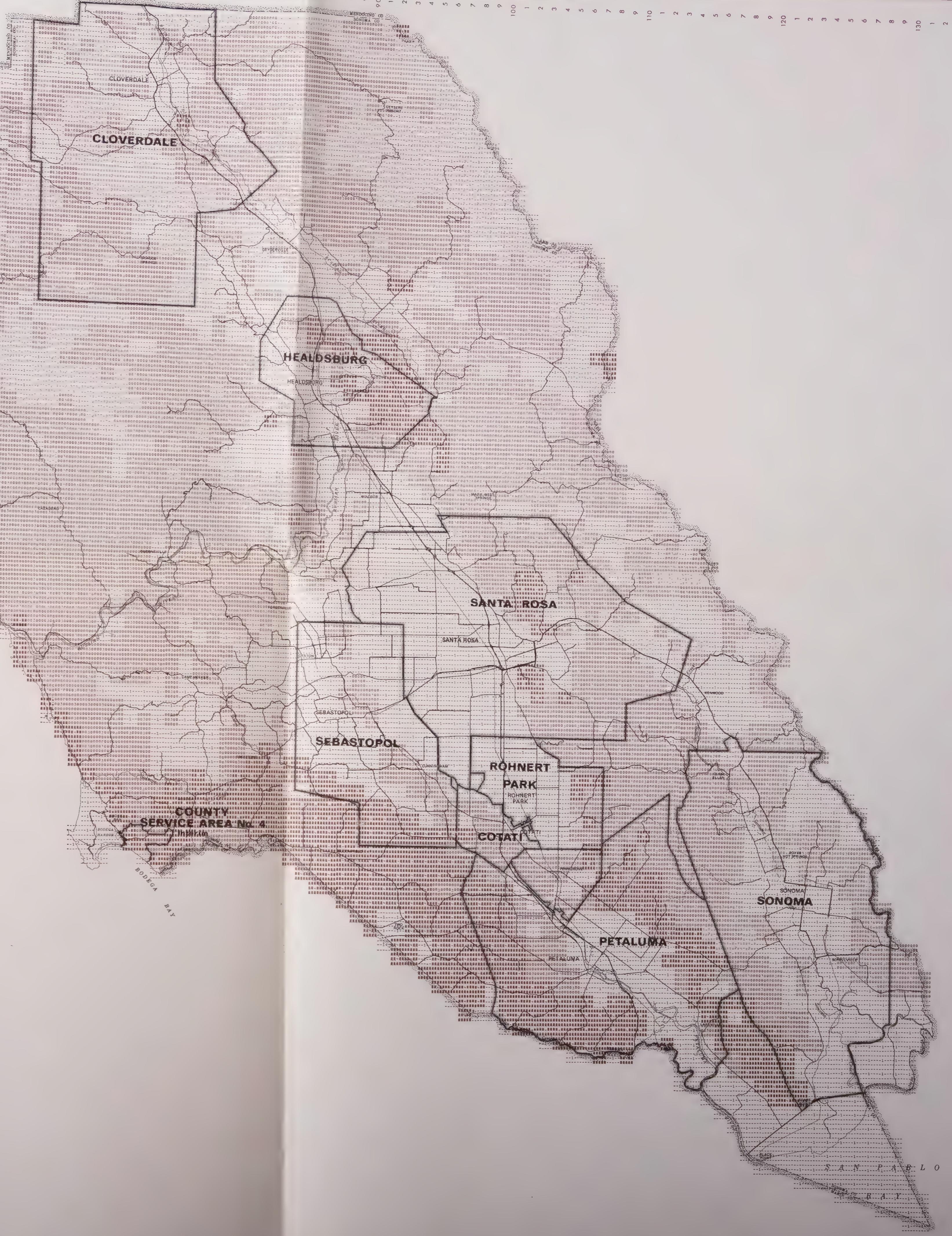


SONOMA COUNTY

OPEN SPACE

PHASE 2

SONOMA COUNTY PLANNING DEPARTMENT



Aquifer Recharge Areas

Description

Any formation or geological stratum yielding water in sufficient quantity to be important as a source of supply is an aquifer. Aquifers are generally unconsolidated deposits - gravel, sand, clay - that allow water to enter the ground water reservoir by direct infiltration and percolation of water from the ground surface. When an aquifer intersects permeable ground surface, that intersection is an aquifer recharge area.

Aquifer recharge areas occupy the relatively flat alluvial valleys of Sonoma County. The Santa Rosa, Cotati, and Petaluma Valleys, the Alexander Valley, and the Valley of the Moon are major recharge areas. Much of the recharge surface has already been blanketed with an impervious cover, obstructing the percolation of water into the aquifer and the replenishment of the ground water reservoir. Aquifer recharge areas and urban development are natural competitors for the flat valley floors.

Source

California State Department of Water Resources - Map of Aquifer Recharge Areas of Sonoma County, 1973.

**AQUIFER RECHARGE AREAS -
Planning Values**

	Sensitive Areas	Unique Areas
IMPORTANCE RATIOS	.82	.90
Over an Aquifer Recharge Area	9	6
Not over an Aquifer Recharge Area	1	1
No characteristics	1	1

STATISTICAL SUMMARY

<u>Aquifer Recharge Areas</u>	<u>Cells</u>	<u>Approx. % of Co.</u>
No characteristics	45	0.1
Not over an Aquifer Recharge Area	3,577	83.0
Over an Aquifer Recharge Area	698	16.0

LEGEND

OVER AN AQUIFER RECHARGE AREA

NOT OVER AN AQUIFER RECHARGE AREA

NO CHARACTERISTICS

AQUIFER RECHARGE AREAS MAP

SONOMA ENVIRONMENTAL DATA SYSTEM

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KILOMETERS JUNE 1973

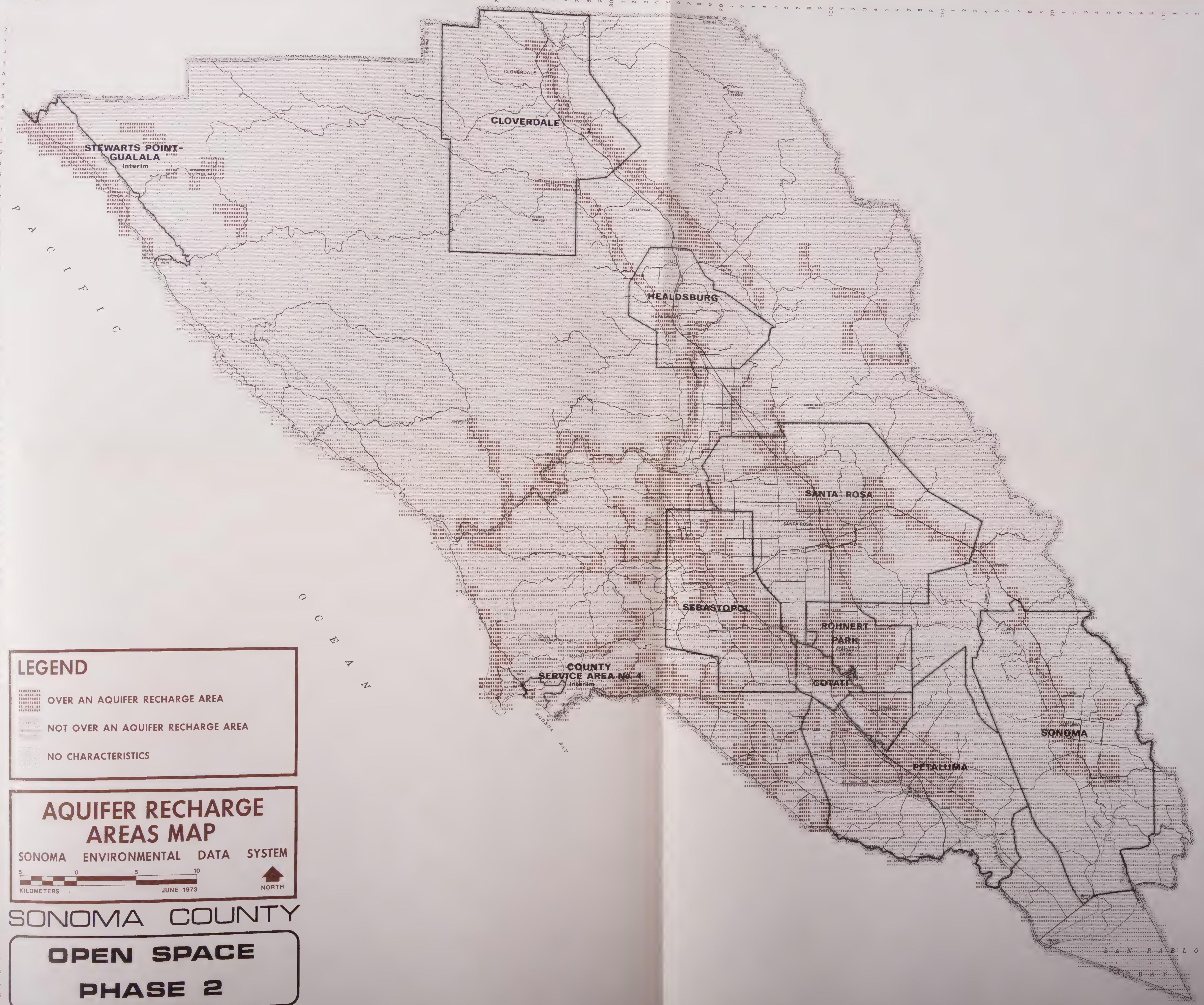


SONOMA COUNTY

OPEN SPACE

PHASE 2

SONOMA COUNTY PLANNING DEPARTMENT





Mineral Resources

Description

Sonoma County has substantial mineral wealth, especially quicksilver, sand, gravel and geothermal power. Past extraction methods, however, have often been harmful to the environment, emphasizing the need for a plan dealing with the problems and potentials of mineral extraction. Mineral deposits of Sonoma County are represented on this map under three categories:

a. Construction materials - Sand and gravel are the most important mineral commodities found in the County. Deposits are scattered throughout the County with major deposits in the Russian River and Dry Creek areas. Sonoma County supplied over 13% of the Bay Area's sand and gravel in 1969. Other construction materials include crushed and broken stone, found in the north and east of the county; flagstone from the Glen Ellen district; limestone; and clay.

b. Minerals - This category includes the diatomite deposits; unexploited perlite deposits; and the quicksilver resources from the western Mayacama Mountains and Guerneville.

c. Geothermal Resources - The harnessing of escaping underground steam in the Geysers area is a unique and significant resource. In a time of need for new power sources, a geothermal power source in Sonoma County capable of generating enough electricity for a city of 800,000 persons is an important resource.

Source

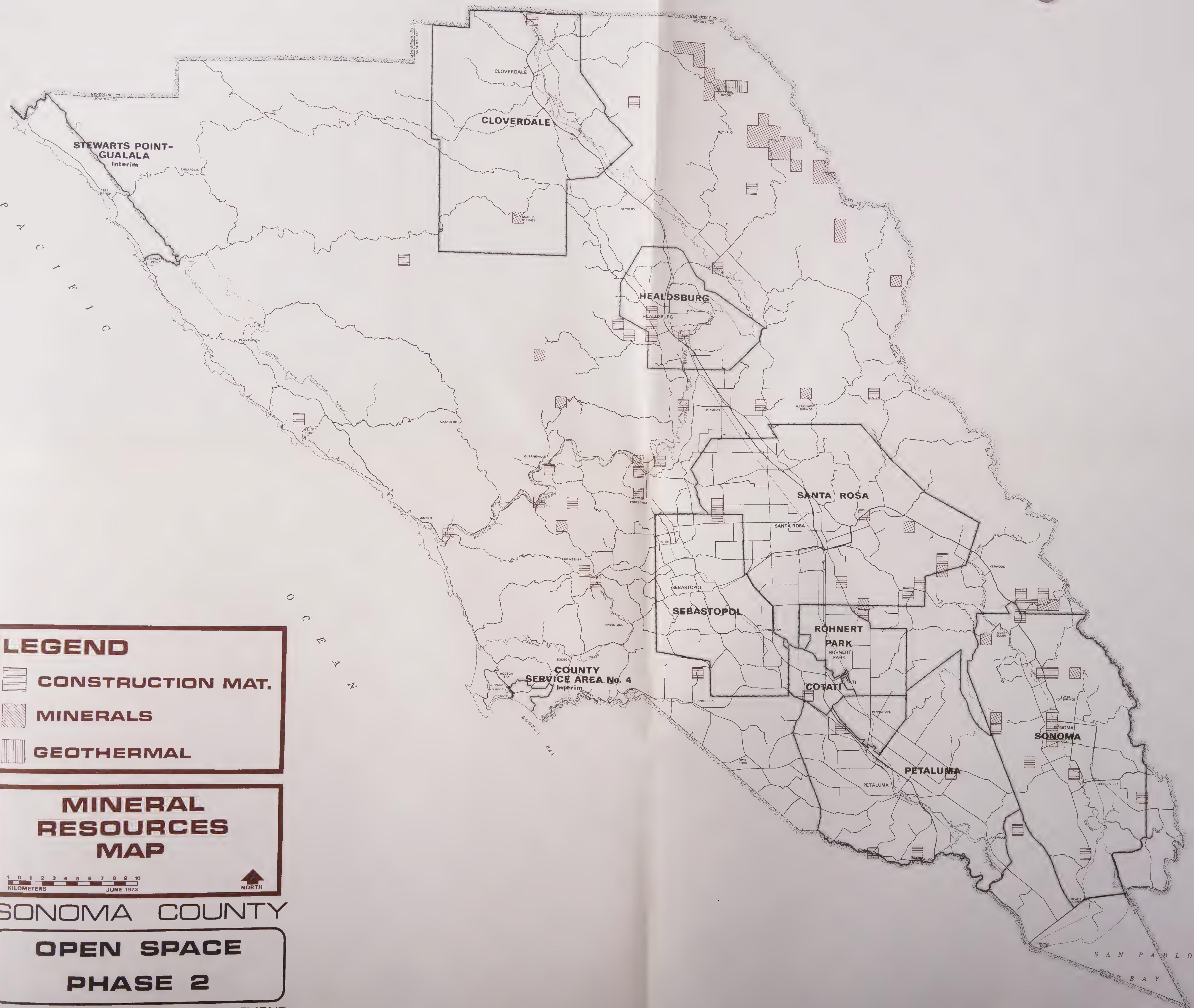
USGS-HUD Earth Sciences Study.

STATISTICAL SUMMARY

<u>Mineral Resources</u>	<u>Cells</u>	<u>Approx. % of Co.</u>
None	4,219	97.7
Construction materials	60	1.4
Minerals	39	.9
Geothermal resources	2	.05

Mineral Resources

Time constraints prevented including the Mineral Resources Map in the computer data bank. Hence, no planning values and importance ratios were assigned. This map was manually compiled and compared with the Composite Sensitivity Maps.



LEGEND

-  CONSTRUCTION MAT.
-  MINERALS
-  GEOTHERMAL

MINERAL RESOURCES MAP

SONOMA COUNTY

OPEN SPACE PHASE 2

Historical and Archeological Sites

Description

This source map includes the following components:

- a. Designated State Historical Landmarks - Historical sites are already designated by the State as having special significance.
- b. Historical sites of local significance - A survey of Sonoma County by a Sonoma State group has uncovered over 100 additional buildings, bridges, etc. that are of some historical significance. This group will conduct further surveys of the County's historical resources.
- c. Sites of known and highly probable archaeological significance - The North Coast Archaeology Group from Sonoma State College has mapped 500 known sites. An additional 2,000 sites having a high probability of containing archaeological treasures have been mapped. This topic is discussed also on page 26.
- d. Areas of Statewide Critical Concern - Areas enumerated by the State as being of Critical Concern because they are of significance to all the citizens of the State. Included are areas of Educational, Scientific and Recreational Resource; Environmental Resources; and Environmental Hazards. More discussion can be found on page 27.

Sources

California Historical Landmarks, State Department of Parks and Recreation.

State Department of Parks and Recreation

Archaeological Resources - For the Open Space Element of the General Plan, North Coast Range Archaeological Group, Department of Anthropology, Sonoma State College.

Environmental Goals and Policies, State Office of Planning and Research.

Department of Geography Historical Survey, Sonoma State College.

Historical and Cultural Resources Sub-committee of the Citizens' Open Space Committee, Jim Voss, Chairman.

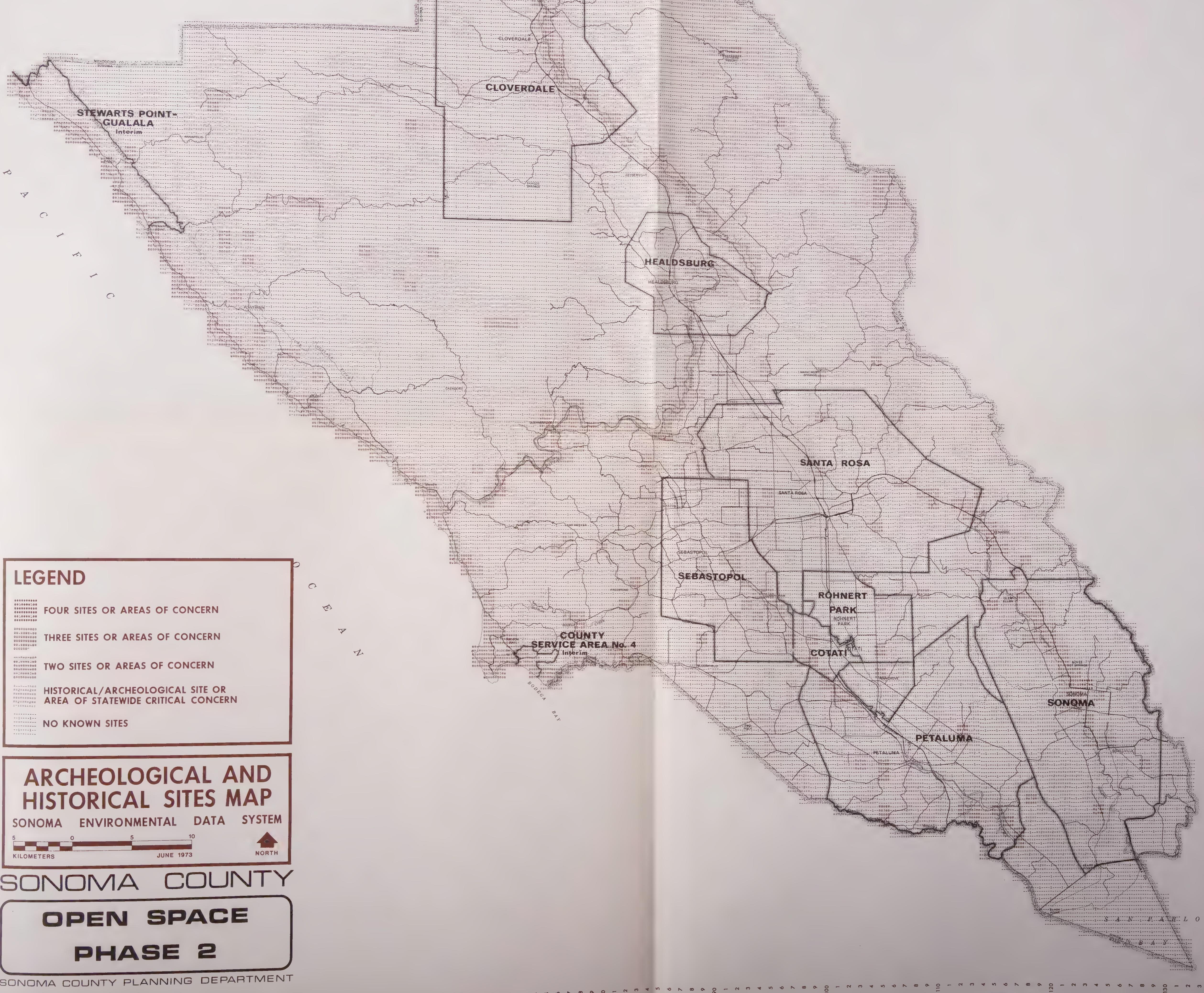
Sonoma County Department of Parks and Recreation.

HISTORICAL AND ARCHEOLOGICAL AREAS - Planning Values

	<u>Sensitive Areas</u>	<u>Unique Areas</u>
IMPORTANCE RATIOS	.81	1.79
No known sites	1	1
Historical/Archeological site or Area of Critical Concern	6	6
Two sites or areas of critical concern	7	7
Three sites or areas of critical concern	8	8
Four sites or areas of critical concern	9	9

STATISTICAL SUMMARY

<u>Historical/Archeological Sites</u>	<u>Cells</u>	<u>Approx. % in Co.</u>
No known sites	2,413	55.8
Historical/ Archeological sites or area of Critical Concern	1,512	35.0
Two sites or areas of critical concern	361	8.9
Three sites or areas of critical concern	33	0.7
Four sites or areas of critical concern	1	0.02



Parks and Recreation Lands

Description

Along with planning for open space, the County is required by law to plan for the recreational needs of its citizens. Park and recreation planning is a long-term process. The first steps have been taken in Phase II and the complete Park and Recreation Plan will be finished during Phase III.

During Phase II, the suitability of locating park and recreation lands in open space has been explored by the Citizens' Committee, resulting in a Park and Recreation Suitability Map. County park planners will develop park site selection criteria during the coming year to further determine park land suitability. The Phase III Open Space Plan will include detailed recommendations for park and recreation lands, trails, and access links to recreation sites.

The Park and Recreation Lands Map notes all proposed and existing federal, state and county park land. Federal recreation land includes Bureau of Land Management holdings and Lake Sonoma, a proposed development by the Corps of Engineers. These federal lands comprise approximately 3,000 acres of the County. Over 18,000 acres of existing (and proposed expansions of) State parks and historical parks are also mapped. The final category, County parks, consists of some 8,000 acres of park land. Included here are park lands proposed in the Capital Improvements Plan, 1971-72 - 1975-76.

Sources

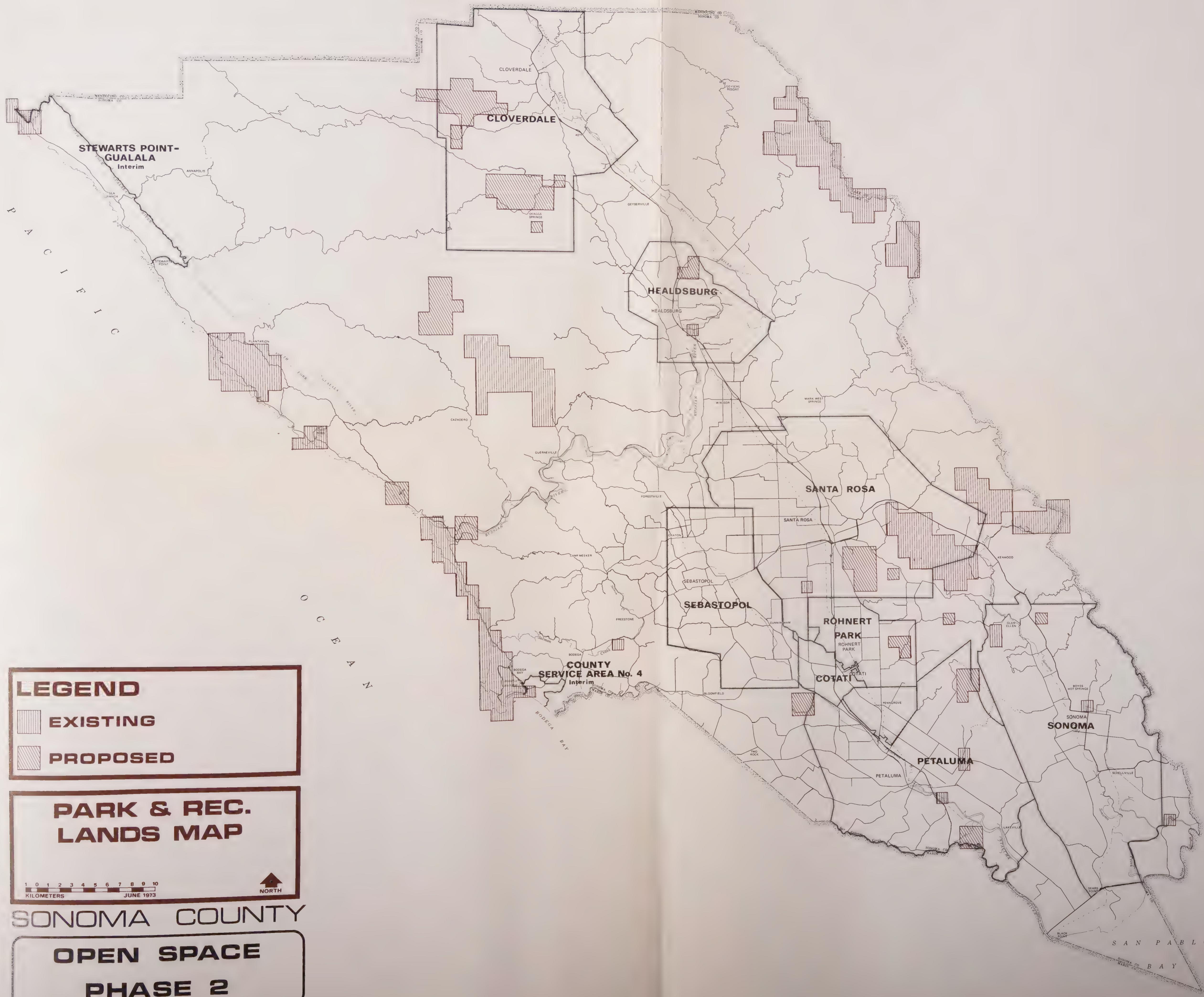
- Sonoma County Department of Parks and Recreation.
California State Division of Parks and Recreation, District 2 Office.
U.S. Department of the Interior, Bureau of Land Management, Ukiah District Office.

Park and Recreation Land

Time constraints prevented including the Park and Recreation Land Map in the computer data bank. Hence, no planning values and importance ratios were assigned. This map was manually compiled and compared with the Composite Sensitivity Maps.

STATISTICAL SUMMARY

<u>Park and Recreation Lands</u>	<u>Cells</u>	<u>Approx. % of Co.</u>
Existing park lands	235	5.4
Proposed park lands	93	2.2



LEGEND

EXISTING

PROPOSED

PARK & REC. LANDS MAP

A horizontal scale bar with numerical markings from 1 to 10. The markings are evenly spaced and labeled with black numbers. Below the scale bar, the word "KILOMETERS" is printed in capital letters. To the right of the scale bar, the date "JUNE 1973" is printed in capital letters.

 NORTHSTAR

SONOMA COUNTY

OPEN SPACE

PHASE 2

Hazards

Description

Five categories of environmental hazards in Sonoma County are mapped:

- a. No known hazards - current scientific study and recent maps do not indicate the presence of any hazard.
- b. Fault zone - the known active faults, plus a 1/8 of a mile zone of either side of the fault. The 1/4 mile band corresponds to the State Division of Mines and Geology's fault study zone required by the Alquist-Priolo Geologic Hazards Zones Act.
- c. Tsunami area - those coastal and bay areas of potential inundation by tsunamis (sea waves resulting from seismic activity).
- d. Critical geologic formations - include the Petaluma formation, portions of the Franciscan formation, bay mud, and sand dunes. These are "critical" in the sense that relative to other formations in the County, they have a greater potential for failure and slope instability.
- e. Fire hazard area - areas where major wildland fires have occurred during the past 12 years.
- f. Landslides - all major known landslide areas in the County as mapped by USGS-HUD and the State Division of Mines and Geology.
- g. Flood hazard areas - relatively flat areas adjacent to rivers or streams with a history of or subject to periodic flooding.

A general discussion of the geologic, fire and flood hazards of Sonoma County is found on pages 21, 22, 23 in association with the Hazardous Areas Sensitivity Map.

Sources *

Fault zones	United States Geological Survey Basic Data Contribution #7.
Tsunami Areas	USGS Basic Data Contribution #12.
Critical Geologic Formations	USGS Basic Data Contribution #12.
	<u>Geology for Planning in the Sonoma Mountain and Mark West-Riebli Road Areas, Sonoma County, California</u> , California State Division of Mines and Geology.
	Geologic Hazard Study - North Sonoma Coast (draft), California State Division of Mines and Geology.
Fire Hazard Areas	California State Division of Forestry, Sonoma Ranger District, Fire History Map of Sonoma County, 1958-1972.
Floods	USGS Basic Data Contribution #16, #17, #18. Sonoma County Water Agency.

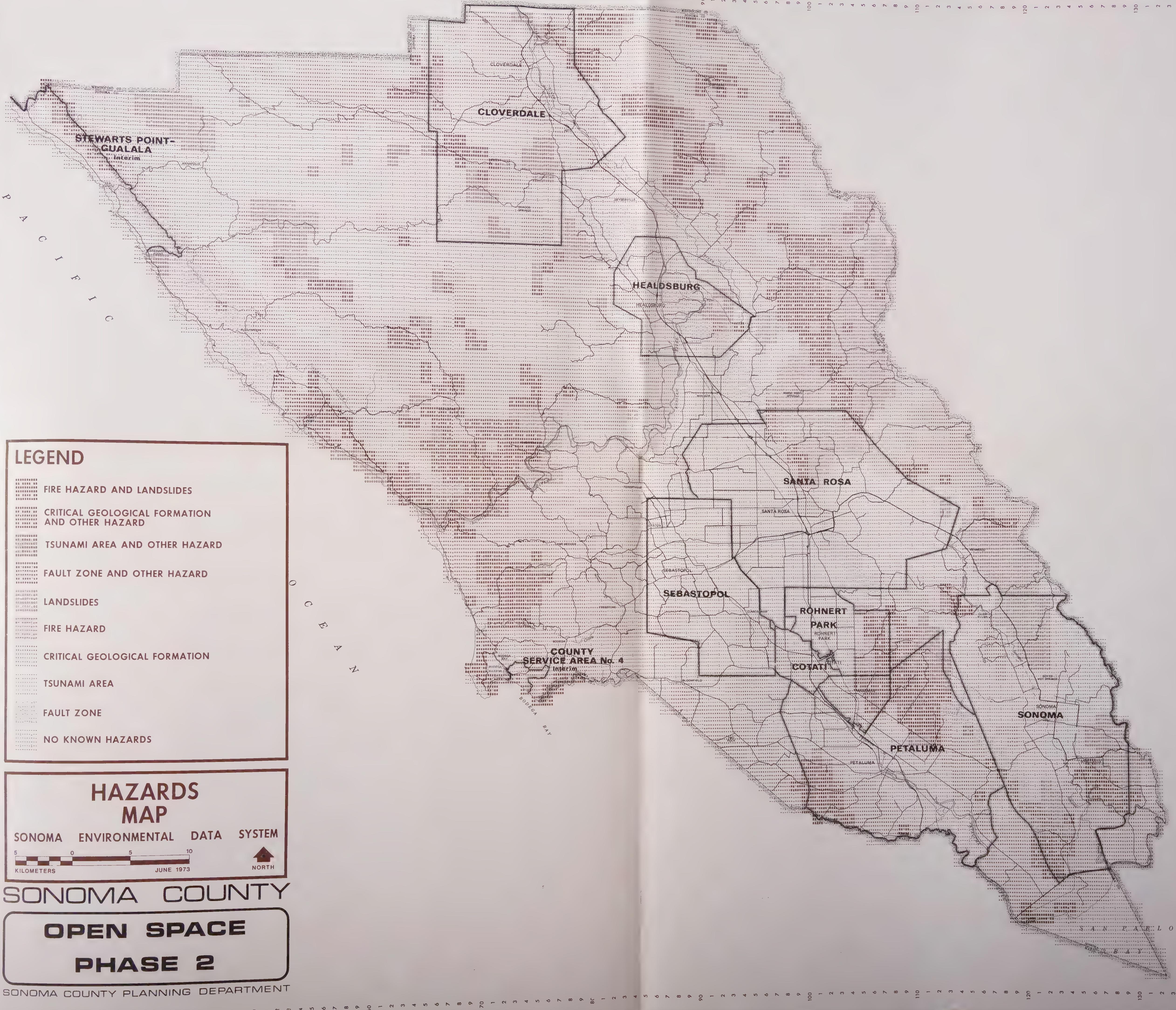
* Michael Huffman, State geologist on contract with the County, contributed generously to the Hazards & Slope Instability Maps.

HAZARDS - Planning Values

IMPORTANCE RATIOS	2.52	.54	.48
No Data	1	1	1
Fault Zone	8	7	5
Tsunami Area	8	3	3
Critical Geological Formation	8	5	2
Fire Hazard Area	7	7	1
Landslides	8	7	1
Fault Zone & Tsunami area	9	4	6
Fault Zone & Crit. Geol. Formation	9	6	5
Fault Zone & Fire Hazard Area	9	7	5
Fault Zone & Landslides	9	7	5
Tsunami Hazard & Landslides	8	6	3
Critical Geol. Forma. & Tsunami Area	8	6	3
Crit. Geol. Forma. & Fire Hazard	8	7	3
Crit. Geol. Forma. & Landslides	9	7	2
Fire Hazard & Landslides	8	8	2
Flood Plains	8		

STATISTICAL SUMMARY

Hazards	Cells	Approx. % of Co
No known hazards	2,099	48.5
Fault Zone	135	3.1
Tsunami area	3	.07
Critical geol. forma.	1,098	25.4
Fire hazard	349	8.1
Landslides	101	2.4
Fault zone & other hazard	75	1.7
Tsunami area & " "	3	.07
Crit. geol. forma. & other hazard	427	9.9
Fire hazard & landslides	30	.7
(Flood plains on Unique Biotic Areas Map)		



LEGEND

HAZARDS MAP

SONOMA ENVIRONMENTAL DATA SYSTEM



SONOMA COUNTY

OPEN SPACE

PHASE 2

SONOMA COUNTY PLANNING DEPARTMENT

Slope Instability

Description

Slope Instability refers to the relative likelihood of slopes to experience some sort of failure - landslides, soil creep, slump, etc. This is a relative measure of slope surfaces in the County. Several factors from the Hazards Map and the Soils Map, in addition to the Slope Map were combined to yield a map indicating five ranges of relative instability.

The recognition of the susceptibility of a slope to movement is an important consideration for any sort of construction work. This map makes no prohibition against building on potentially unstable slopes, but serves to point out where problems are most likely to occur and where special engineering effort may be necessary. The map shows the highest ranges of relative slope instability occur in the northwestern portion of the County where the terrain is especially steep, the Sonoma Mountain areas, and portions of the coastline.

The Slope Instability Map required the combination of several environmental factors. These were derived from the source maps, coded and stored in the computer. The following list shows what combination of factors led to the determination of slope instability in any given cell. Under each of the five levels, any of the combinations was enough to place the cell in that level.

Level 1 - High

Landslide

Critical formation on slope greater than 15%

Critical formation plus fault zone

Critical formation plus very high or high erosion hazard

Critical formation plus high shrink/swell

Fault zone on slope greater than 15%

Fault zone plus very high and high erosion hazard

Fault zone plus high shrink/swell

Level 2 - Medium High

Critical Formation on slope less than 15%

Fault zone on slope less than 15%

Slope greater than 70% plus high shrink/swell

Slope greater than 70% plus very high or high erosion hazard

Level 3 - Medium

Slope greater than 70%

Slope greater than 5% less than 70% plus high shrink/swell

Slope greater than 5% less than 70% plus very high or high erosion hazard

Level 2 - Medium-Low

Slope greater than 5% less than 70% plus low or moderate shrink/swell

Slope greater than 5% less than 70% plus low or moderate erosion hazard

Level 1 - Low

Slope 0 - 5% plus high or moderate or low shrink/swell

Slope 0 - 5% plus high or moderate or low erosion hazard

Sources

Slope

USGS Slope Map of San Francisco Bay
Region

Soil Erosion

Soil Shrink/Swell

U.S. Soil Conservation Survey, Soil
Survey of Sonoma County

Geologic Hazards

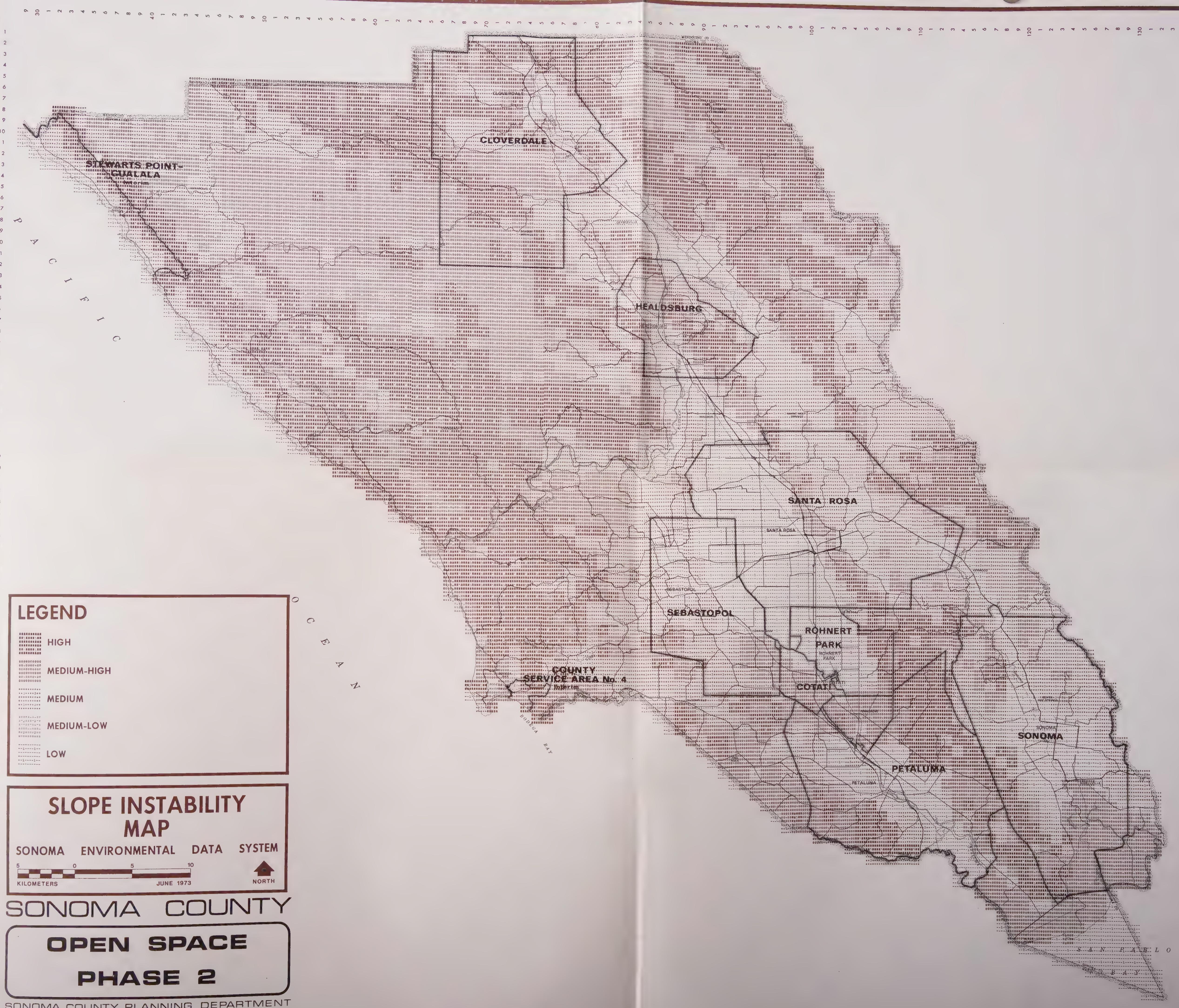
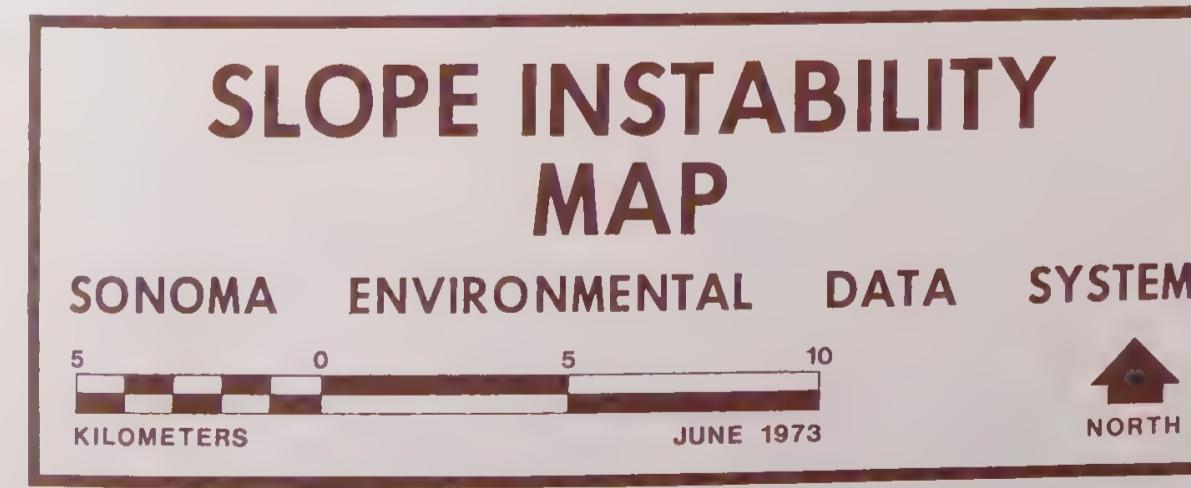
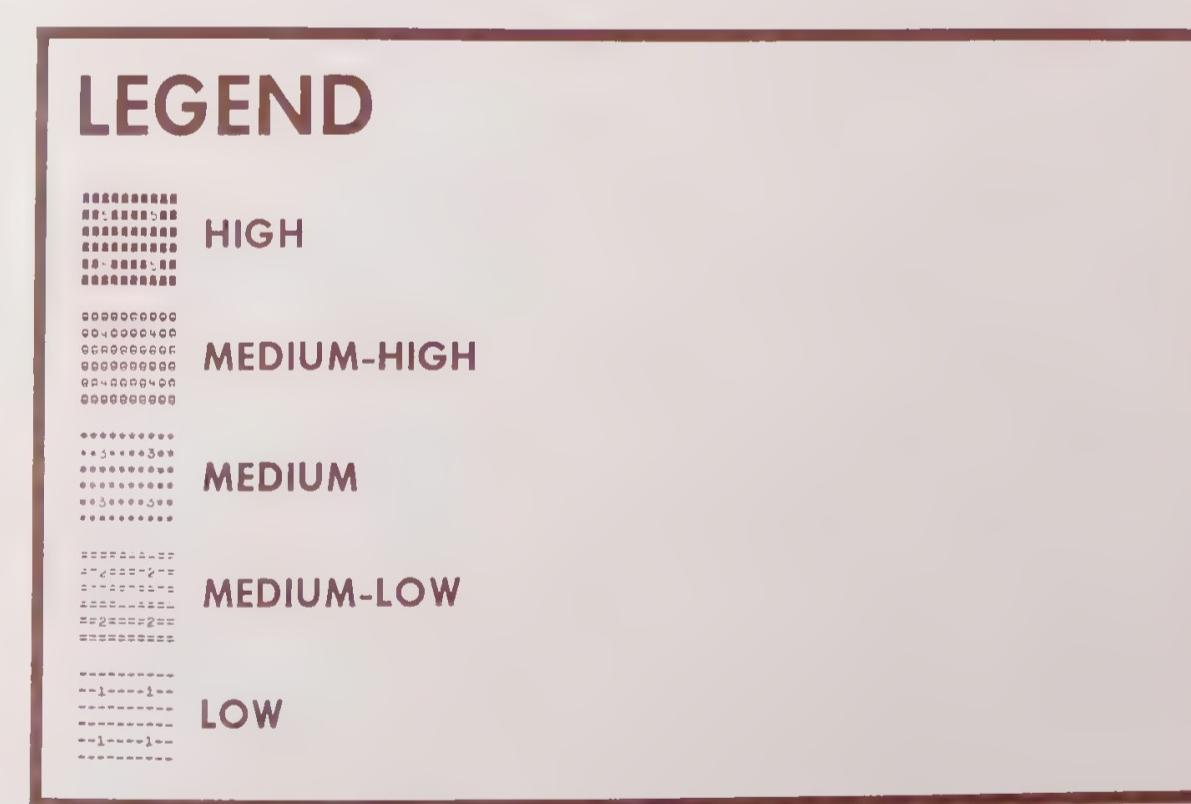
Hazards Map

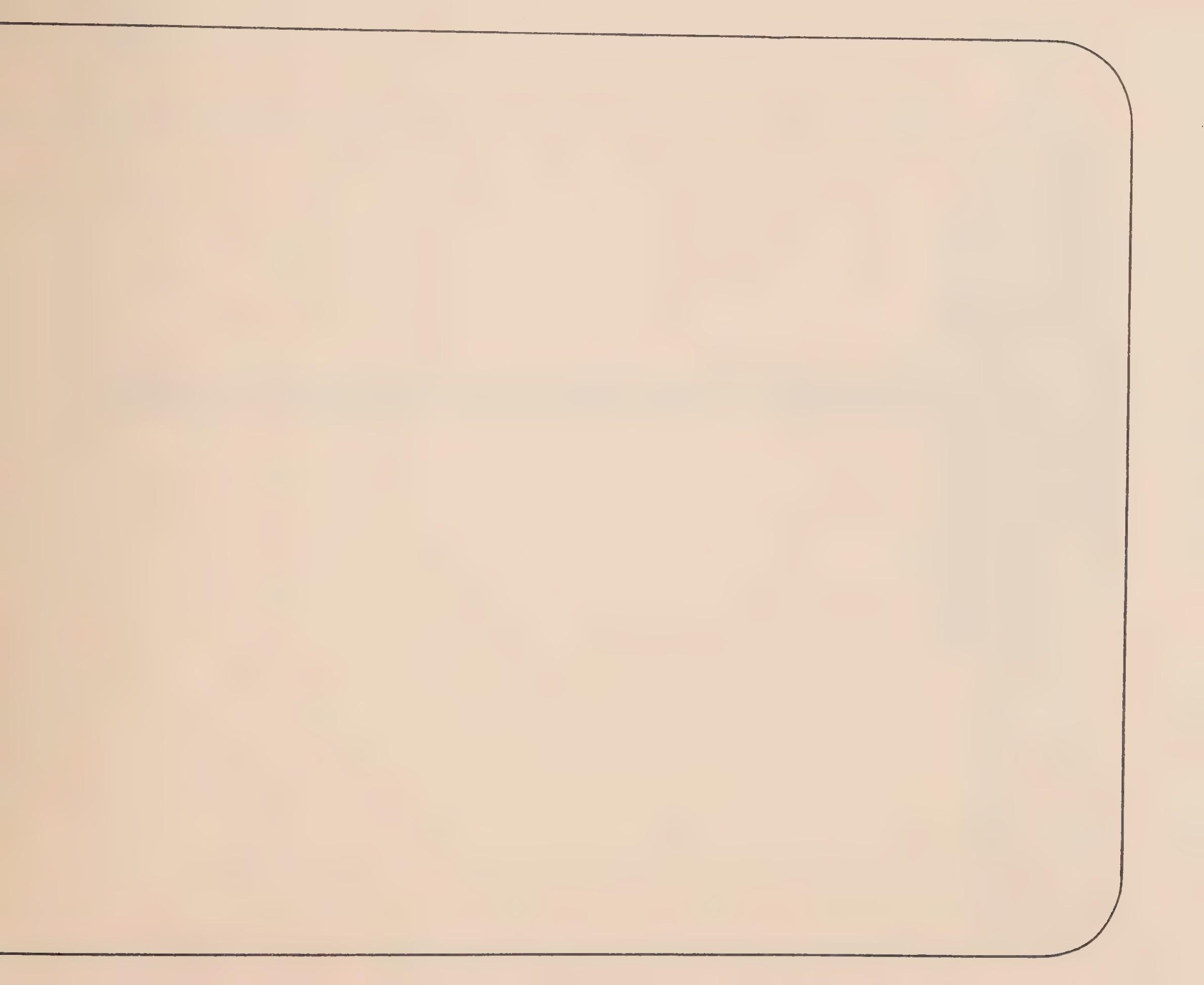
SLOPE INSTABILITY - Planning values

IMPORTANCE RATIOS	1.91	.81
High	9	9
Medium-High	8	7
Medium	6	5
Medium-Low	4	3
Low	1	1

STATISTICAL SUMMARY

<u>Slope Instability</u>	<u>Cells</u>	<u>Approx. % of Co.</u>
High	1,420	32.9
Medium-High	1,082	25.0
Medium	1,105	25.6
Medium-Low	43	1.0
Low	671	15.5

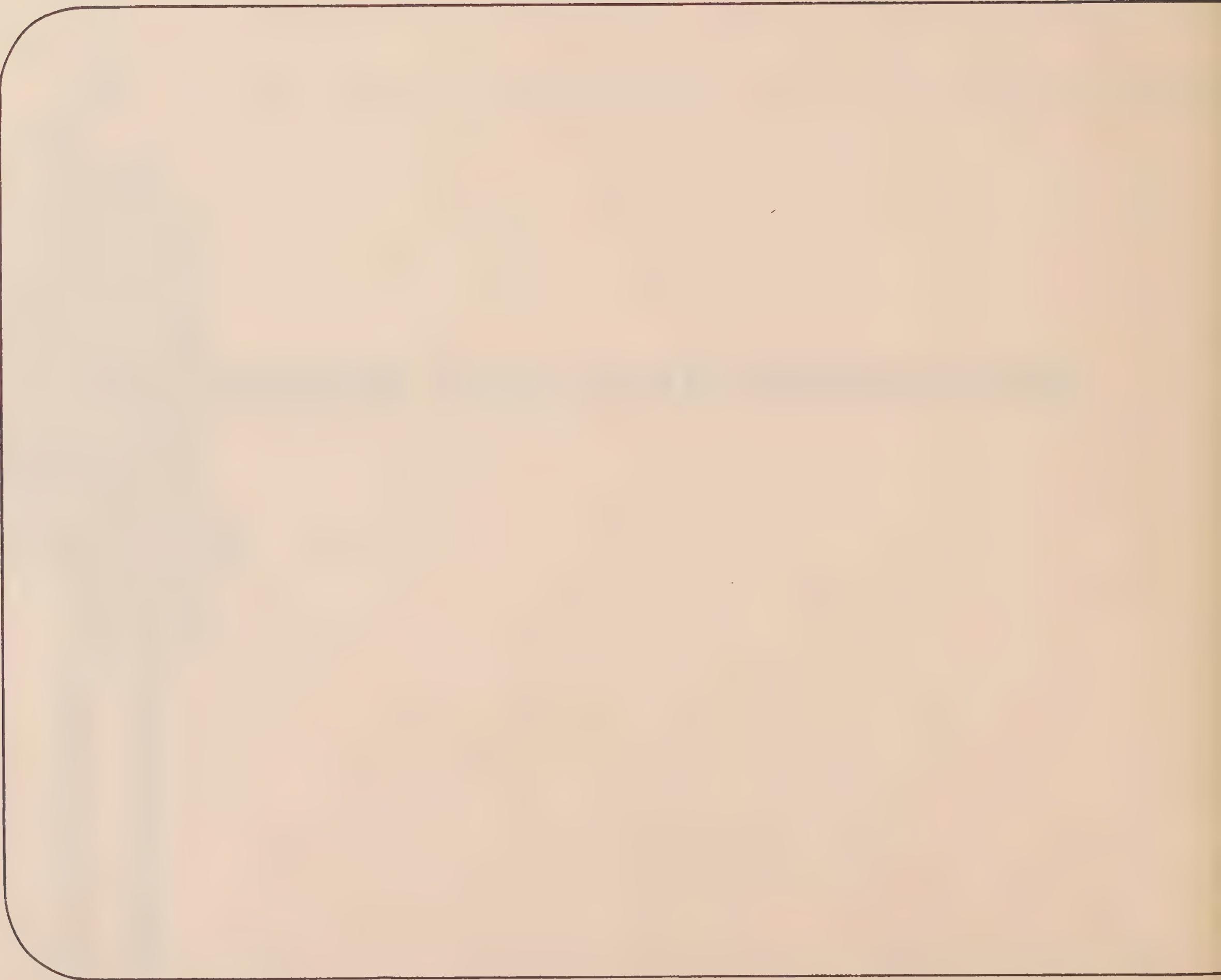




CHAPTER

5

Implementation and Regulation



INTRODUCTION

In the preparation of any element of a General Plan, much thought is given to the utilization of the eventual product; will it be shelf-filler material, or will people actually use its information? What relevance will it have to the land in terms of land use control? The best and most comprehensive open space element conceived will remain weak if not provided with strong, but fair, implementation tools to properly administer the directives of such an element.

AB 966 requires Sonoma County to complete both an open space element and an interim open space zoning ordinance consistent with that element by July 1, 1973. The need for an implementation program arises partially from the voids inherent in conventional use controls and from the urgent need to provide "open space" for the present and preserve open space for the future.

PURPOSE

Through data gathering, analysis and the detailed computer processes conducted in assembling the open space element, hazardous, sensitive, and unique areas within Sonoma County were identified in this report, (Phase II). It is the purpose of the interim open space zoning ordinance to preserve, by regulatory measures, the "open space" character of these lands until such time as the final open space element is completed and integrated with the remainder of the General Plan.

Section 65910 of the Government Code calls for a specific program to implement an open space plan. After consideration of the most viable way of regulating Sonoma County's open space lands on an interim basis, a permit method was chosen similar to that used by the Coastal Commission and the San Francisco Bay Conservation and Development Commission processes. This approach

would ensure a workable control program within Sonoma County's present functioning legislative procedures and not create additional layers of government requiring increased staff time and cost.

RELATIONSHIP TO THE OPEN SPACE ELEMENT, PHASE II

One of the strong points of this form of control is the direct relationship of the implementation program to the adopted Open Space Element, Phase II. California courts have consistently backed interim legislation while work proceeded on completion of the plan, in this case, the completion of the general plan. The "interim" will be the two years remaining to complete and combine all the elements of the general plan into a final document.

In this report, the Staff proposes alternative areas for the Board of Supervisors' consideration for developing an interim open space ordinance.

Permit Control Within Designated Open Space Areas

The composite sensitivity maps are a combination of hazardous, sensitive and unique areas illustrating five degrees of overall environmental sensitivity. Applications for lot splits, variances, tentative sub-division maps, etc., within the permit control areas would require the regular administrative procedure with the additional consideration of environmental criteria. All applications consisting of only a building permit, however, would require, in addition, approval of an open space use permit. Any proposed development of this type which was not on the list of permitted open space uses would have to go through the interim open space permit process.

There are several ways to combine the hazardous, sensitive, and unique areas maps to define the boundaries of the permit system. In the high hazardous areas, it could be mandatory to acquire interim open space zoning approval for any building permit; development proposals for the sensitive and unique areas could require an environmental impact report and review, complete

with an appeal procedure. Another alternative could be to make the granting of a building permit in the sensitive regions a discretionary decision, and maintain the environmental impact report in the unique areas plus the interim permit process within the hazardous zones.

Permit Review

Decisions must also be made within the "County family" as to which organizational structure would serve as hearing boards for the interim open space permit process, review boards for the environmental impact reports, and the appeal body in case of project denial. These questions remain to be resolved prior to adoption of the Open Space Element, Phase II and the Interim Open Space Zoning Ordinance.

Permanent Preservation Maintenance and/or Acquisition

Permanent open space preservation, maintenance and acquisition to replace the interim controls proposed above will be accomplished through the preparation and adoption of a series of specialized control devices and acquisition priorities at the completion of the General Plan.

SUMMARY

This proposed interim ordinance will regulate uses within the designated open space lands in concert with existing regulations. Its formulation was based on the findings and analysis contained in the Open Space Element, Phase II. The Open Space Element itself was derived from the State directives put forth in the Government Code. Because current zoning regulations are not sufficient to meet and control uses and development within the definition of "open space lands," the need for this ordinance is explicit.

Until final preparation and subsequent adoption of the General Plan takes place, the Interim Open Space Zoning Ordinance can be used to effectively regulate those lands identified as "open space." The structure of similar ordinances and the

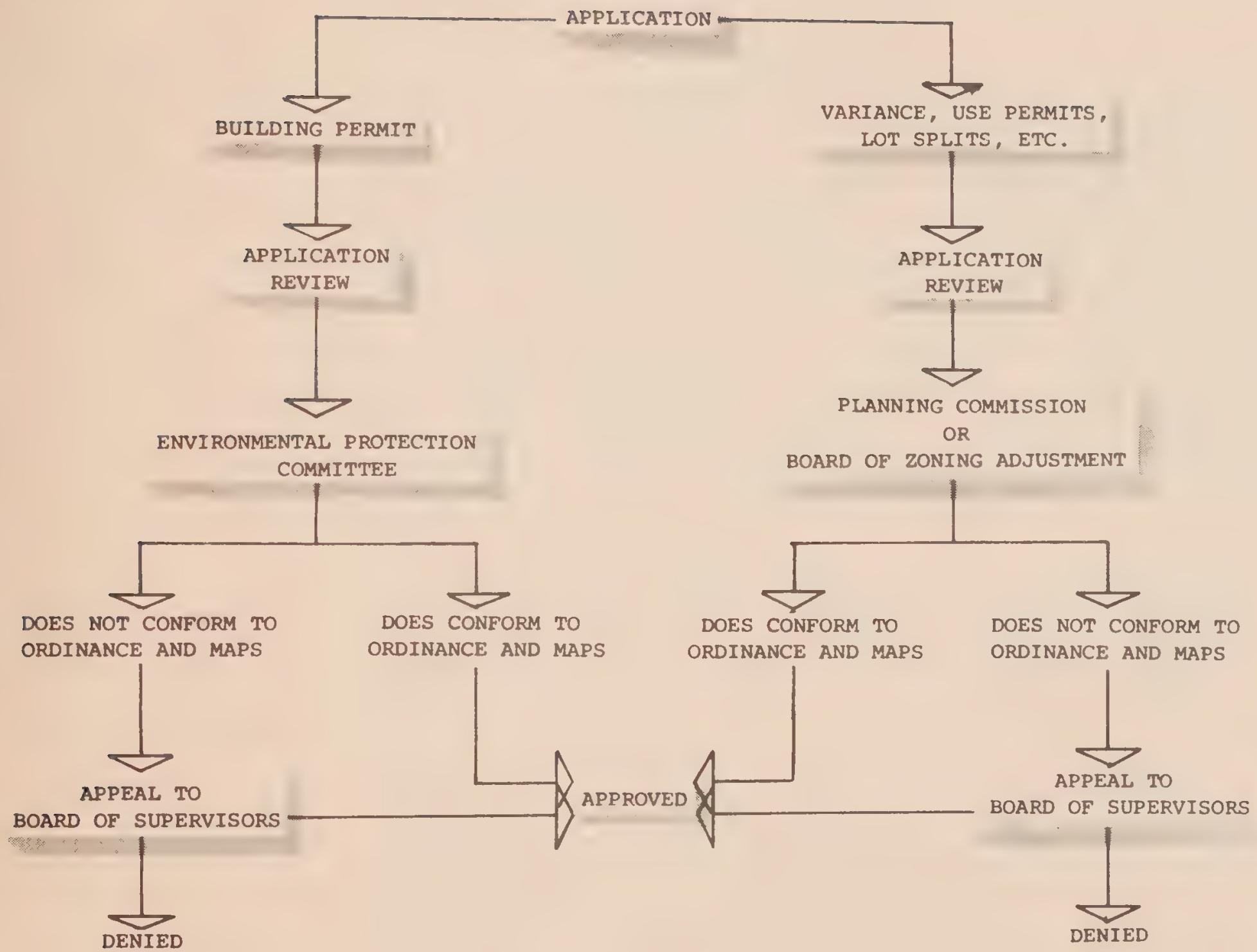
duration of time they dealt with have been consistently upheld in California courts, so work could be completed on a permanent preservation/acquisition program for open space lands.

Because considerable work and time remain until completion of the General Plan, this ordinance is intended to regulate open space lands to insure for the present that no development will take place which would be contrary to the purpose of the Open Space Element and ultimately, the General Plan. It is extremely important to recognize that the open space zoning approach being advocated does not relegate any land solely to open space purposes, and therefore is not "confiscatory," "inverse condemnation," nor the "taking of land without just compensation." It simply requires development proposals to conform to a series of environmental policy standards where those proposals are made within the permit area designated for the application of such standards. All zoning regulations now existing would remain in effect, including uses permitted as well as density provisions allowed.

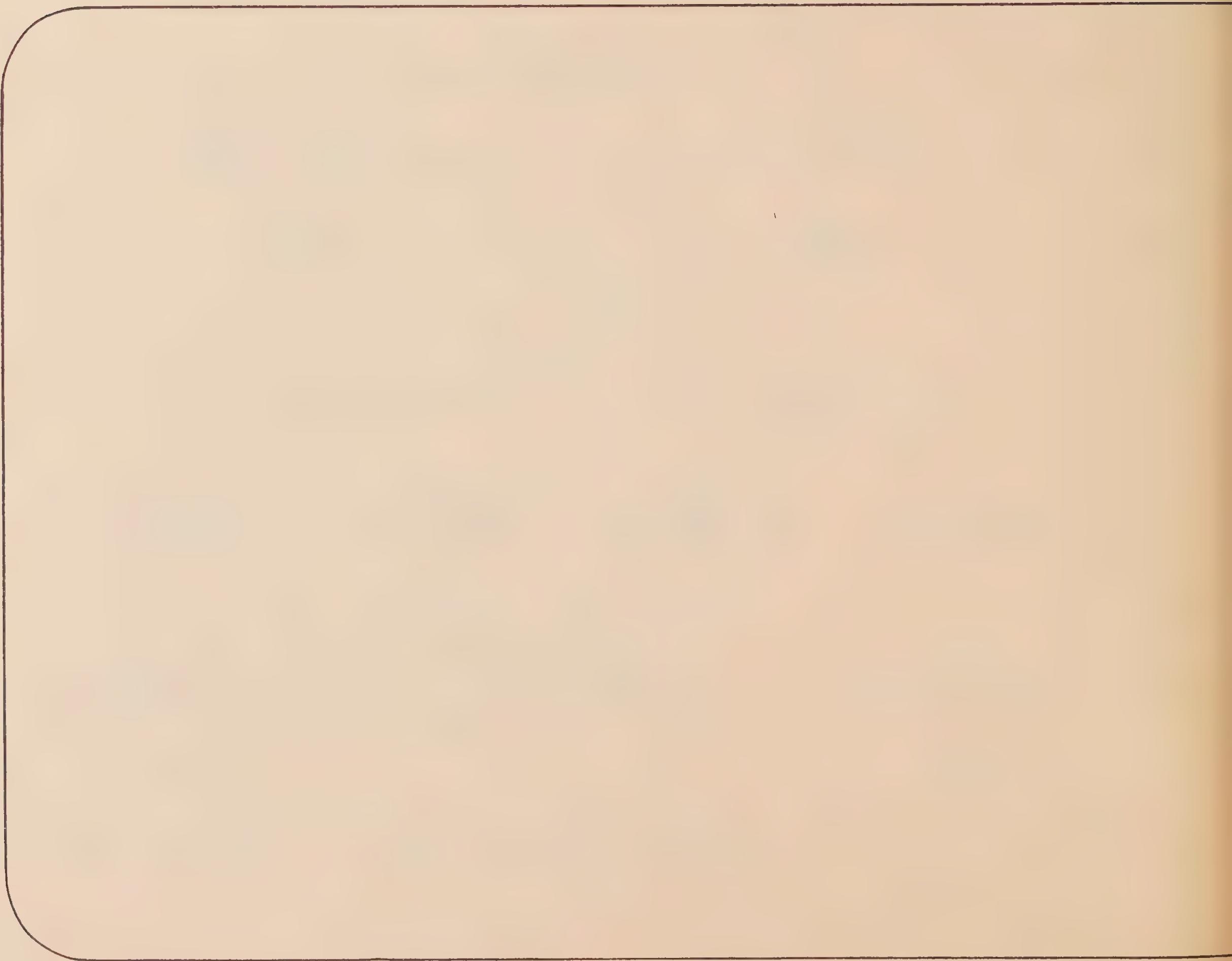
It is also essential to appreciate that the grid-based system developed for Phase II is needed, in a refined state, not only for another phase of the Open Space Element but also for several other General Plan elements. These are conservation, recreation, seismic safety, and safety.

A further point which should be emphasized is that Phase II is not a land use plan but will contribute to the formulation of such a plan. In the land use and transportation planning process expected to be pursued during the next two years of the General Plan program, growth demands and where they are likely to occur over the next 20-30 years will be ascertained. This knowledge can then be related to what has been learned in the preparation of the Open Space Element. This will lead the way to the further determination of preservation priorities.

The open space planning process will not be complete until it is integrated with land use determinations such as open space for providing urban form. This subject is of paramount concern in Sonoma County.



APPLICATION PROCEDURE



CONCLUSIONS

In order to properly appraise and apply this Open Space Element, one must understand what the Element is and what it is not.

The Phase II Open Space Element is an interim product. A part of the County General Plan Program, the Open Space Element will be revised throughout the remaining two years of the program. State law requires the preparation of a temporary plan until the final element is completed. The Phase II Open Space Element fulfills this need.

As a temporary measure, the Open Space Element does not tackle all questions nor does it provide all answers. At this intermediate stage of open space planning an analysis of the environmental sensitivity of Sonoma County is essential. Through computer-aided mapping and the Delphi process value-setting procedure, environmental sensitivity ratings were assigned to County areas. By defining which lands present more serious environmental problems, further open space planning can be directed in those areas.

The Open Space Element Phase II does not make final Land Use decisions, nor does it bind the County to acquire private property. This is an interim product and as such only presents interim measures. Pending further open space research and the completion of the County General Plan, this Element suggests a permit approach to interim land use control.

To accomplish the goals and objectives of proper open space planning for Sonoma County, the continuation of the Open Space Planning program is essential. Further refinement and sophistication of the computer-aided environmental data system is required. The continued efforts of the Citizens' Committee are vital. As long as choices must be made concerning open space planning, a system of priorities must be used. Phase III of the Open Space Element will continue this vital priority-setting procedure.

RECOMMENDATIONS

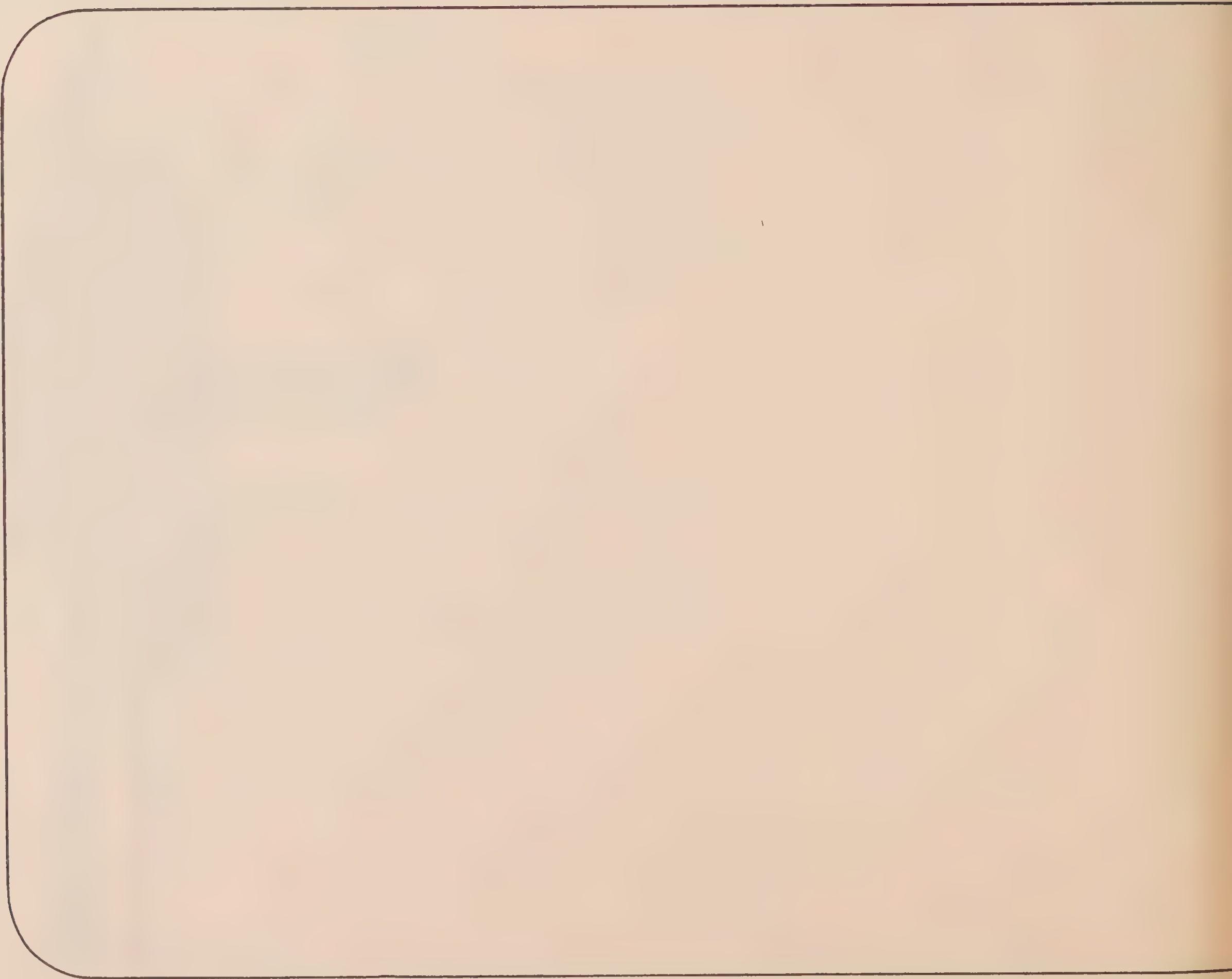
That the Planning Commission and the Board of Supervisors:

1. Adopt by Resolution this report and the three Environmental Sensitivity Maps defining Hazardous, Sensitive and Unique Areas of the County as priority guides for the direction and refinement of the ongoing open space planning effort in Phase III Open Space.
2. Adopt by Ordinance an interim open space zone and zoning map specifying those areas deemed most crucial for:
 - Public Health and Safety
 - Managed Resource Production
 - Natural Resource Preservation
 - Park and Recreation Needs

to which an interim permit system will be applied.

3. Continue their support of the Citizens' Committee work in the review of the open space goals and policies to insure their consistency with the general plan and in assisting the staff in development suitability studies.
4. Encourage the further development and refinement of the Environmental Data System and the integration of this system of collecting and storing data with other County data systems.

Appendixes



(Approved by Governor June 30, 1972. Filed
with Secretary of State June 30, 1972)

The people of the State of California do enact as follows:

SECTION 1. Section 65302 of the Government Code is amended to read:

65302. The general plan shall consist of a statement of development policies and shall include a diagram or diagrams and text setting forth objectives, principles, standards, and plan proposals. The plan shall include the following elements:

(a) A land-use element which designates the proposed general distribution and general location and extent of the uses of the land for housing, business, industry, open space, including agriculture, natural resources, recreation, and enjoyment of scenic beauty, education, public buildings and grounds, solid and liquid waste disposal facilities, and other categories of public and private uses of land. The land-use element shall include a statement of the standards of population density and building intensity recommended for the various districts and other territory covered by the plan. The land-use element shall also identify areas covered by the plan which are subject to flooding and shall be reviewed annually with respect to such areas.

(b) A circulation element consisting of the general location and extent of existing and proposed major thoroughfares, transportation routes, terminals, and other local public utilities and facilities, all correlated with the land-use element of the plan.

(c) A housing element, to be developed pursuant to regulations established under Section 37041 of the Health and Safety Code, consisting of standards and plans for the improvement of housing and for provision of adequate sites for housing. This element of the plan shall make adequate provision for the housing needs of all economic segments of the community.

(d) A conservation element for the conservation, development, and utilization of natural resources including water and its hydraulic

force, forests, soils, rivers and other waters, harbors, fisheries, wildlife, minerals, and other natural resources. That portion of the conservation element including waters shall be developed in coordination with any countywide water agency and with all district and city agencies which have developed, served, controlled or conserved water for any purpose for the county or city for which the plan is prepared.

The conservation element may also cover:

- (1) The reclamation of land and waters.
- (2) Flood control.
- (3) Prevention and control of the pollution of streams and other waters.
- (4) Regulation of the use of land in stream channels and other areas required for the accomplishment of the conservation plan.
- (5) Prevention, control, and correction of the erosion of soils, beaches, and shores.
- (6) Protection of watersheds.
- (7) The location, quantity and quality of the rock, sand and gravel resources.

The conservation element shall be prepared and adopted no later than June 30, 1973.

(e) An open-space element as provided in Article 10.5 (commencing with Section 65560) of this chapter.

(f) A seismic safety element consisting of an identification and appraisal of seismic hazards such as susceptibility to surface ruptures from faulting, to ground shaking, to ground failures, or to effects of seismically induced waves such as tsunamis and seiches.

(g) A noise element in quantitative, numerical terms, showing contours of present and projected noise levels associated with all existing and proposed major transportation elements. These include but are not limited to the following:

- (1) Highways and freeways,
- (2) Ground rapid transit systems,
- (3) Ground facilities associated with all airports operating under a permit from the State Department of Aeronautics.

These noise contours may be expressed in any standard acoustical scale which includes both the magnitude of noise and frequency of its occurrence. The recommended scale is sound level A, as measured with A-weighting network of a standard sound level meter, with corrections added for the time duration per event and the total number of events per 24-hour period.

Noise contours shall be shown in minimum increments of five decibels and shall be continued down to 65 db(A). For regions involving hospitals, rest homes, long-term medical or mental care, or outdoor recreational areas, the contours shall be continued down to 45 db(A).

Conclusions regarding appropriate site or route selection alternatives or noise impact upon compatible land uses shall be included in the general plan.

The state, local, or private agency responsible for the construction or maintenance of such transportation facilities shall provide to the local agency producing the general plan, a statement of the present and projected noise levels of the facility, and any information which was used in the development of such levels.

(h) A scenic highway element for the development, establishment, and protection of scenic highways pursuant to the provisions of Article 2.5 (commencing with Section 260) of Chapter 2 of Division 1 of the Streets and Highways Code.

The requirements of this section shall apply to charter cities.

SEC. 1.5. Section 65560 of the Government Code is repealed.

SEC. 2. Section 65560 is added to the Government Code, to read:

65560. (a) "Local open-space plan" is the open-space element of a county or city general plan adopted by the board or council, either as the local open-space plan or as the interim local open-space plan adopted pursuant to Section 65563.

(b) "Open-space land" is any parcel or area of land or water which is essentially unimproved and devoted to an open-space use as defined in this section, and which is designated on a local, regional or state open-space plan as any of the following:

(1) Open space for the preservation of natural resources including, but not limited to, areas required for the preservation of plant and animal life, including habitat for fish and wildlife species; areas required for ecologic and other scientific study purposes; rivers, streams, bays and estuaries; and coastal beaches, lakeshores, banks or rivers and streams, and watershed lands.

(2) Open space used for the managed production of resources, including but not limited to, forest lands, rangeland, agricultural lands and areas of economic importance for the production of food or fiber; areas required for recharge of ground water basins, bays, estuaries, marshes, rivers and streams which are important for the

management of commercial fisheries; and areas containing major mineral deposits, including those in short supply.

(3) Open space for outdoor recreation, including but not limited to areas of outstanding scenic, historic and cultural value; areas particularly suited for park and recreation purposes, including access to lakeshores, beaches, and rivers and streams; and areas which serve as links between major recreation and open-space reservations, including utility easements, banks of rivers and streams, trails, and scenic highway corridors.

(4) Open space for public health and safety, including, but not limited to, areas which require special management or regulation because of hazardous or special conditions such as earthquake fault zones, unstable soil areas, flood plains, watersheds, areas presenting high fire risks, areas required for the protection of water quality and water reservoirs and areas required for the protection and enhancement of air quality.

SEC. 3. Section 65563 of the Government Code as amended by Chapter 2. Statutes of 1971 (First Extraordinary Session), is amended to read:

65563. On or before June 30, 1973, every city and county shall prepare, adopt and submit to the Secretary of the Resources Agency a local open-space plan for the comprehensive and long-range preservation and conservation of open-space land within its jurisdiction. Every city and county shall by August 31, 1972, prepare, adopt and submit to the Secretary of the Resources Agency, an interim open-space plan, which shall be in effect until June 30, 1973, containing, but not limited to, the following:

(a) The officially adopted goals and policies which will guide the preparation and implementation of the open-space plan; and

(b) A program for orderly completion and adoption of the open-space plan by June 30, 1973, including a description of the methods by which open-space resources will be inventoried and conservation measures determined.

SEC. 4. Section 65700 of the Government Code is amended to read:

65700. The provisions of this chapter shall not apply to a charter city, except to the extent that the same may be adopted by charter or ordinance of the city; except that charter cities shall adopt general plans in any case, and such plans shall be adopted by resolution of the legislative body of the city, or the planning commission if the charter so provides, and such plans shall contain

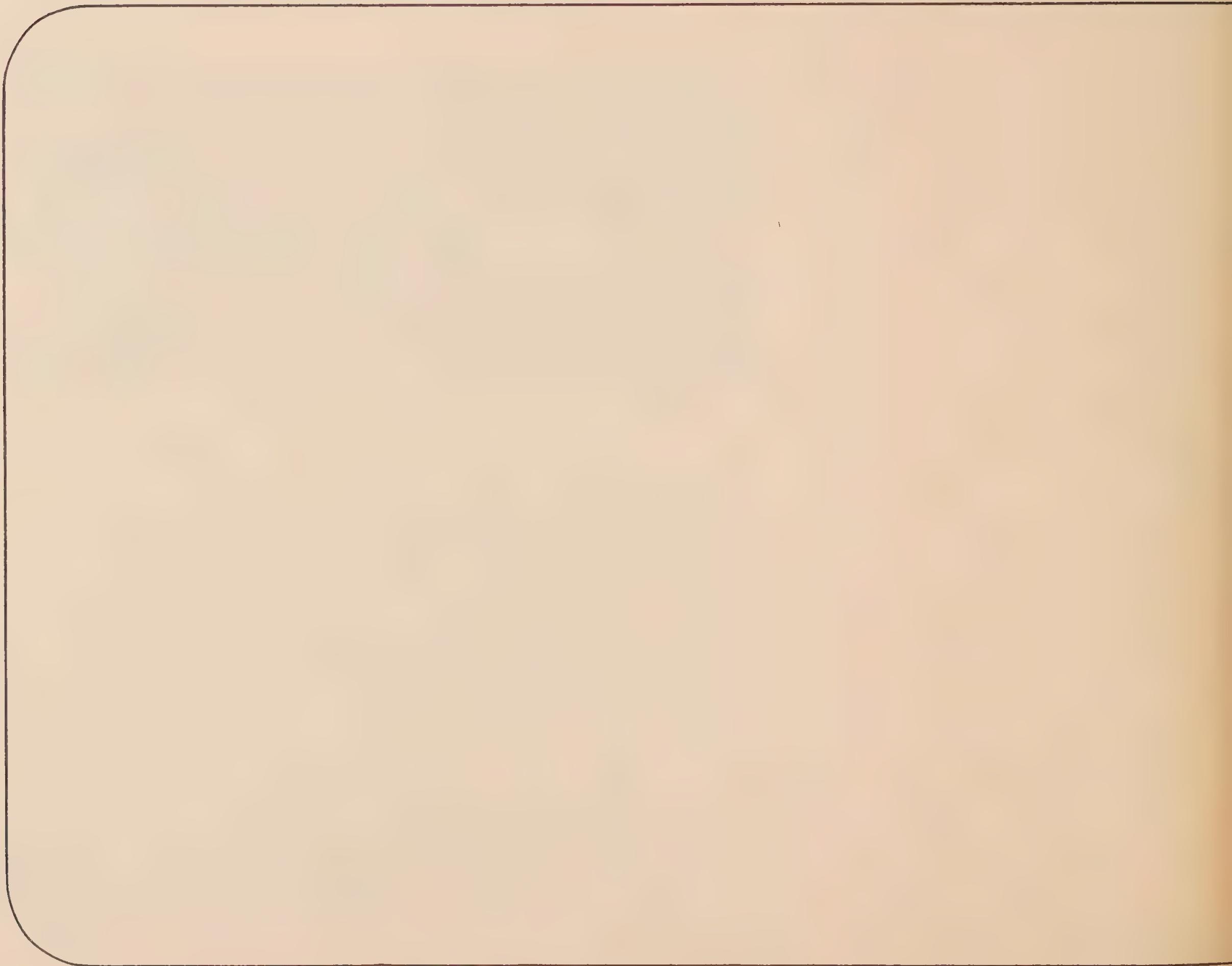
the mandatory elements required by Article 5 (commencing with Section 65300) of Chapter 3 of this title.

SEC. 5. Section 65910 of the Government Code is amended to read:

65910. Every city and county by June 30, 1973, shall prepare and adopt an open-space zoning ordinance consistent with the local open-space plan adopted pursuant to Article 10.5 (commencing with Section 65560) of Chapter 3 of this title.

SEC. 6. This act is an urgency statute necessary for the immediate preservation of the public peace, health or safety within the meaning of Article IV of the Constitution and shall go into immediate effect. The facts constituting such necessity are:

Postponement of required date of submission of open-space and conservation plans must become effective immediately in order to allow cities and counties adequate time for study and preparation of plans prior to submission.



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II

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REPORT OF THE SONOMA COUNTY CITIZENS ADVISORY
COMMITTEE ON OPEN SPACE, CONSERVATION AND RECREATION

INTRODUCTION

III

Recognizing the imperative to consider our relationship to the environment and to husband our limited natural and cultural resources, the Legislature of the State of California has mandated the development and adoption of certain elements as part of the County General Plan. Among the areas which must be covered by general plan elements are open space and conservation.

To assist in meeting those State requirements and providing for the orderly development of the County in those areas mentioned, and in the area of recreation, the Board of Supervisors mandated the Citizens Advisory Committee on Open Space, Conservation and Recreation late in January of this year. The request to participate went out to agricultural, environmental, and certain occupational organizations, to recreation interests, policy and technical advisors from government and any other interested citizens.

In the past months, we have held bi-monthly meetings and heard technical presentations on the status of agriculture in this county, soil types, geologic conditions, legal aspects of open space, and other topics. We have worked in sub committees in six general areas relating to open space, conservation and recreation issues:

1. managed resource production
2. natural and human resources preservation
3. public health, welfare and well-being
4. public safety
5. transportation routes and utility services
6. lands reserved for possible future urban uses

In compliance with the law, we have compiled the following statement of goals and policies which this Committee recommends for the Open Space, Conservation, and Recreation elements of the General Plan. We believe this report to be an important first step with specific details to be developed in the coming year. Our work, when integrated into the Sonoma County General Plan, will be a tool to guide the wise development of the county.

STATEMENT OF GOALS AND POLICIES

GENERAL GOAL AND POLICIES

I. It shall be the goal of Sonoma County to restore and maintain the environment for the economic, recreational, aesthetic, and ecological needs of the public.

To this end, it shall be the policy of this county to:

1. Carefully evaluate all proposed uses of land as to their impact on the environment;
2. Give high priority to open space uses of those lands which are especially valuable because they serve more than one open space purpose;
3. Give high priority to open space uses of those lands which are valuable as open space and which, if not protected, would be changed in a way that would preclude their future use as open space;
4. Work for tax and other economic reforms that will make possible the preservation of desired open space. Such reforms should include the ultimate shift away from a tax based on property value to a tax based more on actual land use or, preferably, income;

5. Support by public funds, or other means, any open space held for public welfare which is rendered economically non-viable for private uses by such designation;
6. Recognize that a population growth policy may be implied in the various county policies, and henceforth, to consider such a policy explicitly, along with the social, economic, environmental, and aesthetic changes in community character and institutions which may result from it. Such a policy should attempt to assure that the county incurs only the population growth its residents deem acceptable and can afford to accommodate.

GOAL AND POLICIES RELATING TO MANAGED RESOURCE PRODUCTION

II. It shall be the goal of Sonoma County to assure economic diversity by maintaining and protecting those areas which are valuable for the production of forest, agricultural, and mineral products, fresh water, and harvestable fish and game.

To this end, it shall be the policy of this county to:

Policies Related to Forestry

1. Aid in protecting the timber and environmental values of all forests economically suitable for logging;
2. As far as possible, keep such forest lands in parcels sufficiently large to encourage economical timber production;
3. Encourage reforestation to perpetuate timber production and to protect the land;

4. Require high standards of forest practices in all areas of timber production;
5. Explore the use of forest lands for such multiple purposes as preserving wildlife, hunting, fishing, hiking, or other compatible uses;
6. Give special consideration to the preservation of timber areas that have unique biotic or scenic characteristics;

Policies Related to Agriculture

1. Protect and maintain productive agricultural lands for the value of their products, their contribution to community life, their environmental values;
2. Give priority to areas where agriculture is the predominant industry, including prime lands and those areas most suitable for special crops or activities, recognizing incompatibility of some residential and agricultural uses;
3. Encourage formation or retention of parcel sizes sufficient to protect such agricultural lands and to sustain an economic use;

Policies Related to Minerals

1. Require that mineral-extraction operations be performed in a way that is compatible with surrounding land uses and does not adversely affect the environment, giving particular consideration to the protection of watersheds, water courses, and underground aquifers and aquifer recharge areas;

2. Consider inventories of mineral resource when planning or approving development and discourage residential, commercial, and industrial development which would be incompatible with proper mining practices;

Policies Related to Water Resource

1. Give highest priority in any consideration of land use to the protection of the water shed and underground aquifers;

Policies Related to Harvestable Game and Fish

1. Evaluate all activities and developments on the coast with the objective of preventing damage to coastal and shore fisheries;
2. Take measures to minimize future damage to fresh-water fisheries and fish habitats and, as far as possible, to repair past damage that has resulted in a decline in the quality of fresh-water sport fishing in the county;
3. Work with other parties towards maximizing hunting and fishing opportunities in the county, while protecting the rights of owners of private property and retaining the diversity of non-game species;
4. Support the maintenance and wise management of adequate populations of game and fish;
5. Support existing harbor and port facilities so as to encourage an active commercial and sport fishing industry in the county.

GOAL AND POLICIES RELATING TO THE PRESERVATION OF PLANT AND ANIMAL LIFE

III. It shall be the goal of Sonoma County to assure that its natural biological diversity be preserved for posterity.

To this end, it shall be the policy of this county to:

1. Assure that all proposed developments will be adequately reviewed with regard to possible adverse or beneficial effects on plant and animal life;
2. Establish a system of permanent Wildlife Habitat Areas. Human uses of these areas should be carefully examined, and construction should not occur within these areas unless it is demonstrated that there will be no unduly detrimental effects on wildlife. Agricultural and recreational uses could be permitted where appropriate. Wildlife Habitat Areas should include, but not be limited to, the following:
 - a. Remaining natural stream or river courses including their riparian vegetation and floodplains, except where modification is necessary to protect existing structures;
 - b. Natural freshwater and salt marshes;
 - c. Estuaries, bays, and mudflats (Use of bays as harbors for fishing vessels and a number of private vessels (that is not detrimental to wildlife values of these areas) should be allowed to continue);

- d. Coastal dune areas, and other coastal areas with unique values for plant and animal life;
- e. All habitats necessary for the preservation of rare or endangered species of animals and plants;
- f. Selected areas of unique significance in the biogeography of North America that are located in the County;
- g. Selected areas of unique significance in the biogeography of California that are located in the County;
- h. Selected areas of unique significance in the biogeography of Sonoma County.

GOAL AND POLICIES RELATING TO SCENIC AND CULTURAL RESOURCES PRESERVATION

IV. It shall be the goal of Sonoma County to safeguard and maintain areas of outstanding scenic, historic, or cultural value.

To this end, it shall be the policy of this county to:

1. Assure the preservation of significant geological features for their educational and scenic value;
2. Where possible, assure that visual access from roads and trails to unique scenic features remain unimpaired by construction of human facilities;
3. Preserve adequate open space around missions, historic settlements and buildings, areas of archeological significance, and other features important to the human history of the county so that the natural settings of such areas are retained;

4. Preserve significant archeological sites wherever possible.
5. Wherever possible, designate around or near public schools open space that may eventually be developed as natural areas for study by students;
6. Where possible, designate around hospitals, public institutions for the care of handicapped and elderly people, and correctional institutions open space as a way to provide the quiet needed for these institutions, as well as serve recreational needs;
7. Give full consideration to the desires and needs of other public and private institutions for open space.

GOALS AND POLICIES RELATING TO NATURAL ENVIRONMENTAL QUALITY

V. It shall be the goal of Sonoma County to dispose of and reuse both liquid and solid waste in ways which cause no hazard to health or safety and in ways which are economically efficient, ecologically sound and aesthetically pleasing.

VI. It shall be the goal of Sonoma County to develop agricultural, industrial, and transportation systems which will minimize air pollution, and not result in economic hardship.

To this end, it shall be the policy of this county to:

1. Consider both liquid and solid waste as resources;
2. Encourage and monitor research and experimentation in the fields of liquid and solid waste disposal and reuse. Such research and experimentation should involve technological, land use, ecological and economic

considerations;

3. Enforce existing water quality legislation and regulations;
4. Disseminate information on how water quality control violators may comply with the laws;
5. Explore a policy of providing economic aid on an interim basis for those segments of the County's population which are critically and adversely affected by stricter enforcement of laws protecting the quality of Sonoma County's water resources;
6. Encourage land use and development patterns which minimize the need for extensive transportation of people to and from their residence to places of work, education, trade, and recreation;
7. Encourage and monitor research and experimentation aimed at developing practical methods of reducing air pollution in the County. Such work should consider transportation systems, energy production and consumption, land use and development patterns, and the role of vegetation in air filtration;
8. Periodically review governmental laws, regulations and policies to determine whether they are consistent with the above goals and policies considering economics and the state of current technology.

GOAL AND POLICIES RELATING TO RECREATION

VII. It shall be the goal of Sonoma County to provide adequate, usable recreational facilities for all of the county's residents and for those people from other areas who may come to Sonoma County for its recreational assets, provided such recreational use is consistent with maintenance of environmental quality.

To this end, it shall be the policy of the county to:

1. Establish trail systems which connect parks, schools, playgrounds, shopping areas, and other public and scenic areas. Some of the trails could make multiple use of transportation and utility corridors (auto, equestrian, pedestrian and bicycle traffic), but those uses should be separate where required for safety and convenience. Other trails could traverse relatively undeveloped areas, but provision should be made to prevent property and ecological damage;
2. Provide diversity in the types of recreational opportunities available throughout the County;
3. Encourage the development and expansion of privately owned and operated recreational facilities to complement publically owned parks and recreational facilities;
4. Attempt to insure that those people who use publicly supported recreational facilities contribute to the cost of providing those facilities.

GOAL AND POLICIES RELATING TO THE URBAN SETTING AND AESTHETICS

VIII. It shall be the goal of Sonoma County to provide an urban setting of such outstanding quality that urban dwellers will not feel a need to escape to other areas.

To this end, it shall be the policy of the county to:

1. Preserve the identity of the individual urban and sub-urban communities in the County by setting aside areas for various open space uses;
2. Discourage the wasteful land use practice of "urban sprawl" utilizing the concept of compact or delineated growth patterns;
3. Provide visual relief from intense urbanization by using open space areas around and, in some cases, extending into urbanized areas;
4. Reduce noise annoyances by the use of vegetation and open space to separate land uses;
5. Retain the ecological, recreational, and aesthetic benefits of Sonoma County's natural waterways;
6. Encourage the use of native vegetation where planning is used to enhance the natural beauty of the County.

GOAL AND POLICIES RELATING TO PUBLIC SAFETY

IX. It shall be the goal of Sonoma County to avoid land uses which threaten public safety.

To this end, it shall be the policy of Sonoma County to:

Policy Related to Geologic Hazards

1. Assure that population densities and development are kept to a minimum in areas of geologic hazard, such as active fault zones, land slide areas, and certain bay muds.

Policies Related to Flood Hazards

1. Classify as permanent open space those areas where flood hazards exist;
2. Establish adequate setback regulations on streams and cliffs;
3. Regulate development in areas around existing or proposed dams, ponds, or other water impoundments where geologic hazards exist and where failures of such structures would endanger life and property.

Policy Related to Fire Hazards

1. Regulate the density and type of construction in areas designated as critical fire hazard areas, consulting with the appropriate fire services for particular regulations prior to subdivision approval or the issuance of a building permit.

Policies Related to Airports

1. Develop Sonoma County Airport as the only feeder airport in the county capable of handling medium commercial carriers; such carriers would connect with the major regional airports;
2. Maintain the smaller airports in the county as bases for light aircraft only, with appropriate clear zones around these facilities;
3. Establish or increase clear zones to provide adequate safety margins and insure that residential areas are not subjected to excessive noise levels;
4. Avoid residential development in airport approach zones;
5. Restrict development in noise zones established on the basis of decible level.

GOAL AND POLICIES RELATING TO TRANSPORTATION ROUTES AND UTILITY SERVICES

X. It shall be the goal of Sonoma County to provide facilities which meet the transportation and utility needs of the public and are of high ecological and aesthetic quality.

To this end, it shall be the policy of Sonoma County to:

Policies Relating to Transportation Routes

1. Plan proposed transportation routes including major and secondary highways, bicycle and bridle paths to be compatible with natural processes and land forms;

- a. Geological features including fault zones, slide and erosion areas shall be carefully considered;
 - b. Prime agricultural land should be avoided when practicable.
2. Treat landscaping as an integral part of transportation construction and emphasize use of native trees and plants;
3. Protect the roadside (scenic corridor) of scenic highways in the county by scenic highway zoning;
4. Plan transportation routes (not necessarily roads) which will provide public access to public lands where practicable;
5. Keep abreast of technology with regard to new modes of transportation with the purpose of upgrading present systems;
6. Review with local agencies and citizens committees the priorities for highway construction or other transportation facilities;
7. Place emphasis on environmental impact statements prior to construction of transportation facilities;
8. Require economic Cost-Benefit studies on proposed major transportation projects;
9. Integrate Sonoma County's public transportation with the regional public transportation systems of other counties;
10. Retain in perpetuity existing railroad rights-of-way for future transportation needs, utility corridors, and recreational uses;

11. Maintain the Petaluma River and Bodega Harbor as potential waterway transportation routes.

Policies Related to Utility Services

1. Adopt a general plan of utility services to supply the needs of the people of Sonoma County for electricity, natural gas, telephone, Cable TV, water and sewer;
2. Consider the particular environment through which proposed public utilities will pass, so as to minimize the disturbance of aesthetic values;
3. Avoid heavily developed residential areas, public recreation and scenic areas, when routing major transmission lines, where practicable;
4. Encourage continued studies to develop economical methods of installing underground electric transmission lines;
5. Require electrical distribution lines in new residential or commercial areas to be placed underground and establish a plan for converting existing overhead lines to underground facilities where feasible;
6. Require that electric substations and gas control stations be located, designed and landscaped to fit inconspicuously and harmoniously into their surroundings;
7. Encourage the multiple use of transmission line rights-of-way for riding and hiking trails, pedestrian ways, landscaped greenways, parking, park areas and wildlife preserves;

8. Consolidate utilities into common utility corridors whenever practicable;
9. Require Economic Cost-Benefit and environmental impact studies on all proposed aqueducts and trunk sewers well in advance of construction;
10. Consolidate growth in cities and communities to avoid long extensions of water and sewer services.

GOAL AND POLICY RELATING TO LANDS RESERVED FOR FUTURE DESIGNATION

XI. It shall be the goal of Sonoma County to provide for future unforeseen land uses.

To this end, it shall be the policy of Sonoma County to:

1. Reserve appropriate areas of open space for future designation for urban uses or permanent open space, depending upon demonstrated need.

SOME TOPICS FOR FURTHER STUDY

It is the plan of this Citizens Committee to Proceed in the next year with more specific work on the Open Space, Conservation and Recreation Elements of the General Plan to implement these goals and policies. There are many areas which we feel require additional study both by ourselves and technical personnel. Although the following is incomplete, it does indicate those studies we feel are desirable. They are:

- A. A study of the appropriate tax reforms and tools available to make possible the preservation of open space;
- B. A study of methods of public compensation to land owners whose property value is reduced or development rights infringed upon by restrictions of the County Plan;
- C. A study of lot split and subdivision ordinances and regulations, with special emphasis on their effect on the preservation of optimum parcel size, to protect forest and agricultural lands and to sustain parcels large enough for economic use;
- D. A detailed study of the recharge system for ground water resources and quality and location of underground aquifers;
- E. A more comprehensive analysis of the geologic hazards of Sonoma County;
- F. A complete analysis of the flood hazards of Sonoma County, including both flood plains (based on elevation) and other areas which have a history of flooding;

- G. A complete inventory of all existing dams, ponds, or similar water impoundments, and diked lands and an analysis of the geologic hazards that may influence these structures;
- H. A study identifying areas where critical fire hazard exists or where development could create a critical fire hazard.
- I. A comprehensive study of areas of unique plant and animal life;
- J. An inventory of areas in the county of unique historical interests;
- K. A study of all natural and man made waterways in Sonoma County with consideration given to means and costs of maintaining and restoration of natural stream characteristics.

SONOMA COUNTY PLANNING DEPARTMENT

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General Plan Coordinator: *James Casper*

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Project Director

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Land Use Suitability

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Environmental Sensitivity

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Open Space Implementation

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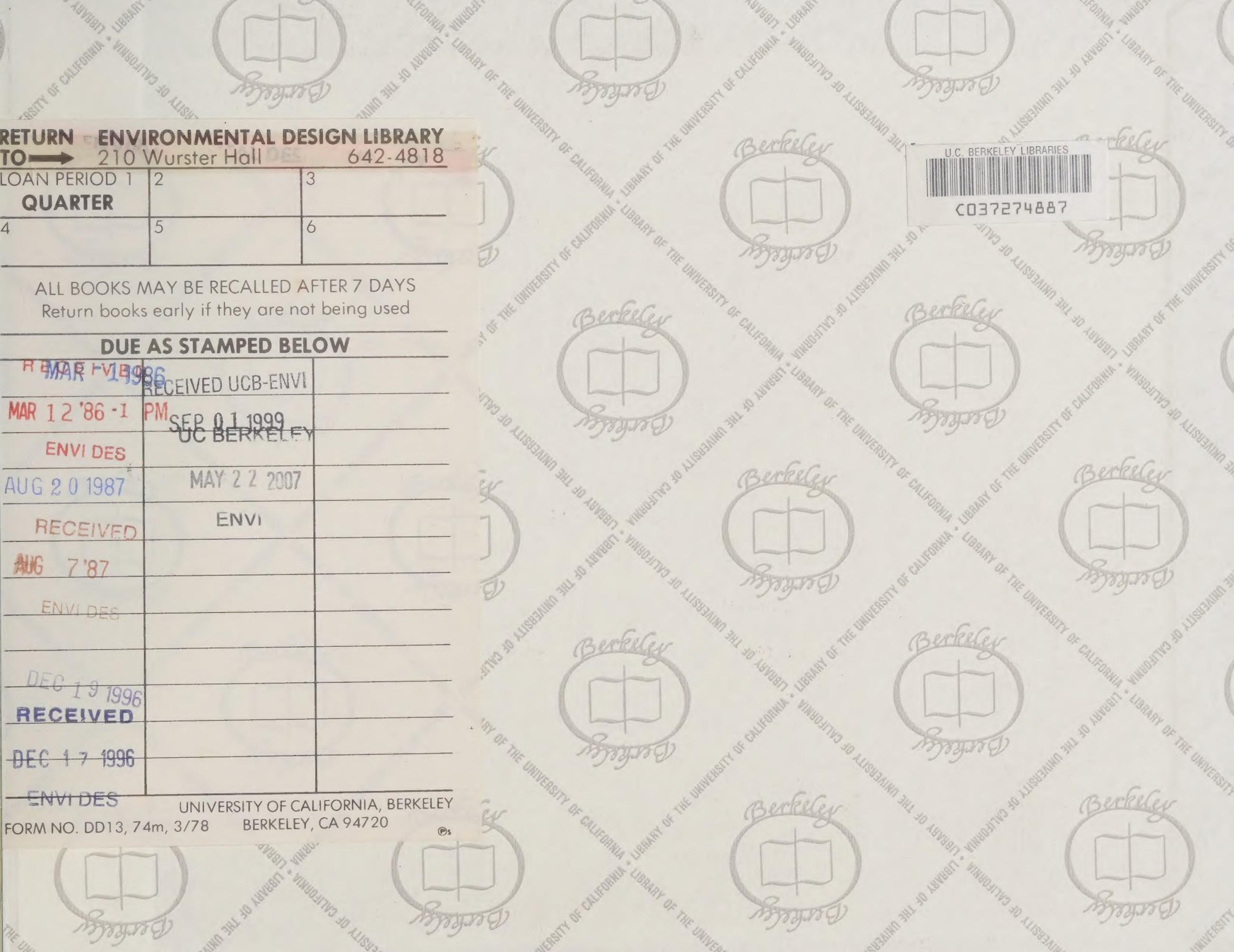
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